# Illinois Commerce Commission

# Assessment of Commonwealth Edison Company

# Reliability Report and Reliability Performance

# for Calendar Year 2004

Pursuant to 83 Ill. Adm. Code 411.140

December 23, 2005

# 1. Executive Summary

In compliance with Section 16-125 of the Public Utilities Act and the Illinois Commerce Commission's ("Commission's") electric reliability rules as found in 83 Illinois Administrative Code, Part 411, Commonwealth Edison Company ("ComEd") prepared and filed its "2004 Electric Power Delivery Reliability Report" ("Reliability Report") on Wednesday, June 1, 2005. ComEd divided its Reliability Report by referencing the applicable subparts of Part 411 in a format that made locating information easy in the current report.

In each successive year since 2000, ComEd has shown significant improvement in customer satisfaction surveys of scoring higher than two or three other Illinois utilities in some recent residential surveys. Commission Staff ("Staff") will continue to recommend that ComEd focus on improving customer service.

ComEd reported 111 worst performing circuits in 2004, twenty-one of which represented repeats from one of the previous four years. Because of the number of repeating worst performing circuits from year to year ComEd had worked to complete maintenance work on the 2004 worst performing circuits by the end of June 2005. The frequency of material deficiencies observed by Staff in June 2005 appeared to be at levels below those observed in previous years. This should have the benefit of improving the service reliability of those customers and minimizing the instances of circuits appearing as worst performers in consecutive years.

Since the spring of 2000, ComEd has claimed to be on a four-year tree trimming cycle. Staff's field observations indicate that much has improved since that time but potential remains for improvement in ComEd's vegetation management program. Staff recommends that ComEd continue improving its vegetation management program.

Staff recommends that ComEd inspect insulating oil levels of substation equipment as appropriate and make adjustments as necessary.

## Table of Contents

## 2. Introduction

Beginning with the year 1999, and at least every three years thereafter, 83 Ill. Adm. Code 411.140 ("Part 411.140") requires the Commission to assess the annual reliability report of each jurisdictional entity and evaluate its reliability performance. Part 411.140 requires the Commission to:

A) Assess the reliability report of each entity.

B) Assess the jurisdictional entity's historical performance relative to established reliability targets.

C) Identify trends in the jurisdictional entity's reliability performance.

D) Evaluate the jurisdictional entity's plan to maintain or improve reliability.

E) Include specific identification, assessment, and recommendations pertaining to any potential reliability problems and risks that the Commission has identified because of its evaluation.

F) Include a review of the jurisdictional entity's implementation of its plan for the previous reporting period.

This document assesses ComEd's "2003 Electric Power Delivery Reliability Report" ("Reliability Report"), filed on Wednesday, June 1, 2005, and evaluates ComEd's reliability performance for calendar year 2004. This is ComEd's seventh annual reliability report filed pursuant to code part 411.

## 3. ComEd's 2004 Customer Base and Service Territory

ComEd provides electric service to roughly 3.7 million customers. ComEd's service territory encompasses over 400 municipalities in northern Illinois, including the City of Chicago.

## 4. ComEd's Electric Distribution System

Part 411.120(b)(3)(G) states that the utility is to report on the age, current condition, reliability and performance of its existing distribution and transmission system. To comply with the requirement that a utility report on the age of its existing distribution and transmission systems, ComEd provided age data on various types of equipment. The age data reported for the equipment included information on the median age, age distribution, and quantity by age. Table 1 lists the median age of some of the equipment that ComEd reported in the last five reports.

**Table 1. Median Age (in years) of Typical Equipment**

| | 2004[1] | 2003[2] | 2002[3] | 2001[4] | 2000[5] |
|---|---|---|---|---|---|
| Lightning arresters | | | | | |
| Distribution | 12 | 13 | 12 | 11 | 11 |
| Transmission | 12 | 6 | 7 | 40 | 39 |
| Substation | 28 | 28 | 29 | 31 | 31 |
| Underground cables | 16 | 16 | 17 | 15 | 15 |
| Direct Buried | 15 | 15 | 15 | 13 | 13 |
| Cables in Conduit | 31 | 31 | 32 | 30 | 30 |
| Conductors | | | | | |
| Distribution Copper & Other | 55 | 55 | 54 | 52 | 51 |
| Distribution Aluminum | 30 | 30 | 29 | 27 | 27 |
| Transmission | 33 | 32 | 31 | 30 | 29 |
| Poles & Towers | | | | | |
| Distribution | 36 | 36 | 35 | 33 | 32 |
| Transmission Steel poles | 23 | 24 | 23 | 26 | 25 |
| Transmission Wood poles | 37 | 37 | 37 | 37 | 36 |
| Transmission Towers | 37 | 36 | 35 | 34 | 31 |
| Distribution crossarms | 29 | 26 | 28 | 26 | 25 |
| Meters | 13 | 15 | 14 | 20 | 19 |
| Distribution transformers | 16 | 16 | 14 | 18 | 18 |
| Substation Transformers | 28 | 28 | 28 | 27 | 27 |

While reviewing the year to year trends is intriguing Staff believes that the median age of the existing equipment in service does not provide, by itself, an indication of possible reduction in reliability performance of the distribution or transmission systems. The age of the equipment in combination with an increase in the number of interruptions due to equipment failures or malfunction would provide a stronger basis to determine if equipment is deteriorating to the point that it is reducing the reliability of the electric system.

## 5. Assessment of ComEd's 2004 Reliability Report

ComEd filed its 2004 Reliability Report on Friday, May 27, 2005, in compliance with Section 16-125 of the Public Utilities Act and the Commission's electric

[1] Page G-3 through G-5 of ComEd's 2004 Reliability Report -- Due to the refunctionalization of a portion of ComEd's equipment and enhancements in their data ComEd believes this analysis may not be directly comparable between years.
[2] Pages G-3 through G-5 of ComEd's 2003 Reliability Report -- Due to the refunctionalization of a portion of ComEd's equipment and enhancements in their data ComEd believes this analysis may not be directly comparable between years.
[3] Pages G-3 through G-5 of ComEd's 2002 Reliability Report -- Due to the refunctionalization of a portion of ComEd's equipment and enhancements in their data ComEd believes this analysis may not be directly comparable between years.
[4] Page G-3 through G-5 of ComEd's 2001 Reliability Report -- Due to the refunctionalization of a portion of ComEd's equipment and enhancements in their data ComEd believes this analysis may not be directly comparable between years.
[5] Page G-17 through G-19 of ComEd's 2001 Reliability Report

reliability rules as found in 83 Illinois Administrative Code, Part 411. ComEd organized the Reliability Report by the applicable subparts of Part 411.120 and 411.210.

For the seventh year, ComEd divided its Reliability Report by referencing the applicable subparts of Part 411. This format made locating information easy in the current report as well as referencing materials in past reports. Staff commends ComEd for the organization of their response in the Reliability Report.

## 6. ComEd's Historical Performance Relative to Established Reliability Targets

Part 411.140(b)(4)(A-C) establishes electric service reliability targets that jurisdictional entities (utilities) must strive to meet. These targets specify limitations on customer interruptions as well as hours of interruption that a utility must strive not to exceed on a per customer basis. Code Part 411.120(b)(3)(L) requires each utility to provide a list of every customer, identified by a unique number, who experienced controllable interruptions in excess of the service reliability targets, the number of interruptions and interruption duration experienced in each of the three preceding years, and the number of consecutive years in which the customer has experienced interruptions in excess of the service reliability targets.

In April 2004, ComEd, along with all other regulated Illinois electric utilities, agreed to report on all interruptions (controllable and uncontrollable) in relation to the service reliability targets for the reporting periods of 2003 through 2007, and to include the specific actions, if any, that the utility plans or has taken to address the customer reliability concerns.

Table 2 summarizes the reliability targets defined in Part 411.140(b)(4)(A-C) and the number of ComEd customers exceeding Service Reliability Targets in 2004 and 2003 per Part 411.120(b)(3)(L) and the April 2004 agreement[6].

[6] 2004 Reliability Report, Supplemental Report, Customers Experiencing Interruptions (controllable and uncontrollable). All electric utilities in the State of Illinois agree to file a supplement to the Annual Reliability Report on June 1 for the reporting periods of 2003 through 2007.

**Table 2. Service Reliability Targets**

| Immediate primary source of service operation level | i. Maximum number of interruptions in each of the last three consecutive years | ii. Maximum hours of total interruption duration in each of the last three years | Customers exceeding Service Reliability Targets (i. &/or ii.) in **2004**[7] | Customers exceeding Service Reliability Targets (i. &/or ii.) in **2003** |
|---|---|---|---|---|
| 69kV or above | 3 | 9 | 0/0 | 0/0 |
| Between 15kV & 69kV | 4 | 12 | 0/0 | 0/0 |
| 15kV or below | 6 | 18 | 406/46 | 5/163 |

As summarized in Table 2, no ComEd customers experienced interruptions in excess of reliability targets for customers whose immediate primary source of service operates at 69kV or above. Additionally, no ComEd customers experienced interruptions in excess of reliability targets for customers whose immediate primary source of service operates between 15kV and 69kV. ComEd did report in the supplemental report that 406 customers (whose immediate primary source of service operates at 15kV or below) exceeded the maximum number of six interruptions in each of the last three consecutive years while 46 customers (whose immediate primary source of service operates at 15kV or below) exceeded the eighteen hour maximum of total interruption duration in each of the last three years.

For the above-mentioned customers, ComEd identified various actions the company plans to take to address their reliability concerns. These actions included the installation or upgrade of fuses, lightning arrestors, wildlife protection, reconductoring, performing tree trimming, replacing cable, repairing damaged insulators & static wires and replacing switchgear.[8]

Part 411.140(b)(4)(D) states that "Exceeding the service reliability targets is not, in and of itself, an indication of unreliable service, nor does it constitute a violation of the Act or any Commission order, rule, direction, or requirement." ComEd appears to have a process in place to identify, analyze, and correct service reliability for customers who experienced a number or duration of interruptions that exceeds the targets in 411.140(b)(4)(A-C).

The number and causes of interruptions for Part 411.120(b)(3)(D) are shown for the ComEd system in Table 3[9]. Interruptions in Table 3 were as defined in 411.20.

[7] Pages 1 thru 5, ComEd's 2004 Reliability Report, Supplemental Report.
[8] Page 11, ComEd's 2004 Reliability Report, Supplemental Report.
[9] Page 1, ComEd's 2004 Reliability Report, Supplemental Report.

**Table 3. 2004 Interruptions**

| Interruption Cause Category | 2004 Interruptions |
|---|---|
| Animal Related | 3,013 |
| Customer | 9 |
| Intentional | 2,812 |
| Other | 315 |
| Overhead Equipment Related | 4,315 |
| Public | 2,850 |
| Tree Related | 5,628 |
| Transmission & Substation Equip | 69 |
| Weather Related | 7,220 |
| Underground Equipment Related | 6,085 |
| Unknown | 1,040 |
| ComEd/Contractor Errors | 371 |
| **Total** | **33,727** |

Staff commends ComEd's expanded and more meaningful response to the requirements of Part 411.120(b)(3)(L).

## 7. Analysis of ComEd's Year 2004 Reliability Performance

ComEd broke out the 2004 planned and unplanned interruptions into 64 separate cause categories in detail for the system as a whole and each of the four regions in Tables 5-9 in section C (pages C-3 through C-12) of ComEd's 2004 Reliability Report. Table 4 below compares, for the last three years, aggregations under leading cause categories that represented 5 percent or more of total interruptions.

**Table 4. Leading Causes of Unplanned Interruptions[10]**

| | 2004 Interruptions | % of Total | 2003 Interruptions | % of Total | 2002 Interruptions | % of Total |
|---|---|---|---|---|---|---|
| Public | 2,850 | 8% | 3,237 | 9% | 3,386 | 11% |
| Weather Related | 7,220 | 21% | 7,654 | 21% | 5,706 | 19% |
| Animal Related | 3,013 | 9% | 3,892 | 11% | 3,505 | 12% |
| Tree Related | 5,628 | 16% | 6,847 | 19% | 4,202 | 14% |
| Overhead Equipment Related | 4,315 | 13% | 4,131 | 11% | 2,346 | 8% |
| Underground Equipment Related | 6,085 | 18% | 5,691 | 16% | 5,493 | 18% |
| Intentional | 3,531 | 10% | 3,702 | 10% | 3,166 | 10% |
| | | | | | | |
| **Total[11]** | **34,403** | | **36,222** | | **30,243** | |

Five categories listed in Table 4 for 2004 ("weather" through "underground equipment") amount to 77% of all interruptions in the 2004 Reliability Report which is down from 78% in the 2003 Report but up from 70% in the 2002 Reliability Report. Looking at the raw numbers we see that significant progress was made in reducing animal related interruptions but that progress was eclipsed by major increases in the other categories. Staff will continue to follow the progress of these and other trends in interruptions.

Part 411.120(b)(3)(G)(v) states that the utility is to perform a satisfaction survey covering reliability, customer service and customer understanding of the utility's services and prices. Through a rulemaking, the Commission designed and approved a single customer survey applicable to each Illinois jurisdictional entity on a yearly basis starting in 2000. These entities joined forces and, through a competitive bidding process, selected Opinion Dynamics Corporation ("ODC") to implement the study. ODC asked customers to rate ComEd's performance on a scale of zero to ten where zero means the utility is doing a poor job and ten means the utility is doing an excellent job. An average rating or response to each question is presented on pages G-11 and G-12 of ComEd's 2004 Reliability Report. A summary of some responses is shown in Table 5.

[10] Page C-3, Table 5: 2004 Planned and Unplanned Interruptions – System, 2004 ComEd Reliability Report.

[11] Page G-8, Table 12: Summary of Interruptions (2003), Page G-22, Table 12: Summary of Interruptions (2002); Page G-36, Table 12, Summary of Interruptions (2001); 203 ComEd Reliability Report

**Table 5. Summary of Customer Survey Responses**

(average rating on the zero-to-ten scale)

| Customer Class | | 2004 | 2003 | 2002 | 2001 | 2000 |
|---|---|---|---|---|---|---|
| Residential | Providing electric service overall (Overall Service) | 8.47 | 8.20 | 8.19 | 8.00 | 7.63 |
| | Providing reliable electric service (Service Reliability) | 8.41 | 8.31 | 8.22 | 8.03 | 7.65 |
| Non-Residential | Providing electric service overall (Overall Service) | 8.56 | 8.39 | 8.10 | 7.98 | 7.67 |
| | Providing reliable electric service (Service Reliability) | 8.64 | 8.50 | 8.14 | 8.08 | 7.76 |

The ratings in Table 5 denote statistically significant improvements for each successive year. Staff commends ComEd's sustained improvement in survey responses.

Table 6 provides another perspective on customer satisfaction through the viewpoint of customer reliability complaints[12] when values from this year's Reliability Report are compared to previous years. The bottom line of the table shows the calculated number of complaints per 1,000 customers and provides a relative measure of complaints from the years 2004 through 2000 for the system. The number of complaints has remained below the 2000 level throughout the entire period.

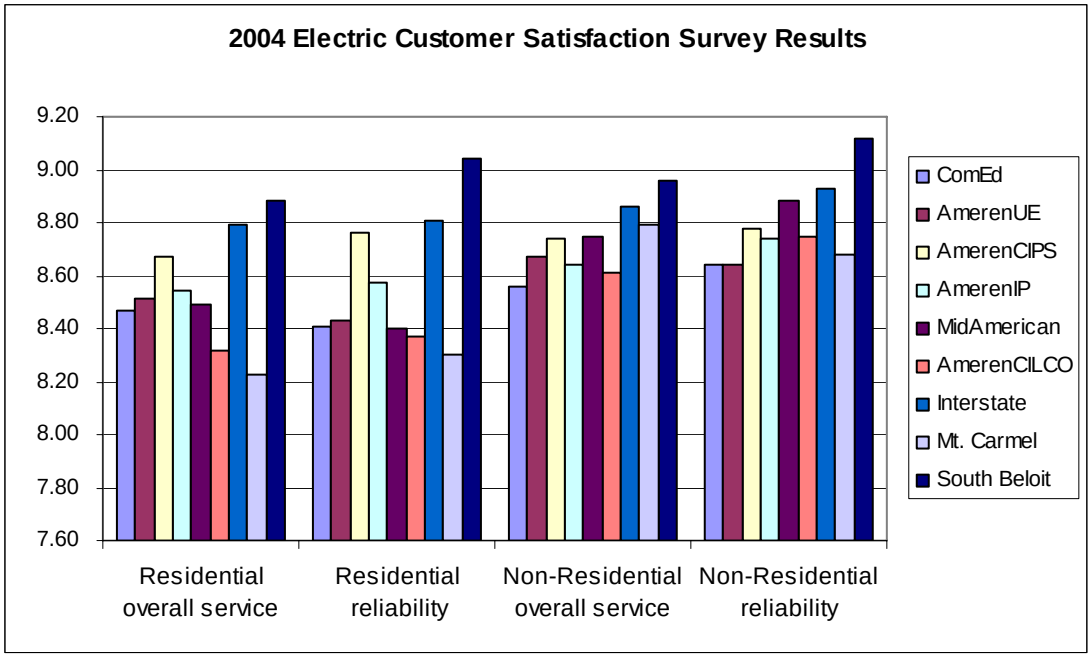
**Table 6. Customer Complaints: System Total**

| | 2004 | 2003 | 2002 | 2001 | 2000 |
|---|---|---|---|---|---|
| Nature of Complaints | **System Total** | **System Total** | **System Total** | **System Total** | **System Total** |
| **Sustained Interruptions** | 2,389 | 2,249 | 2,202 | 2,847 | 3,328 |
| **Momentary Interruptions** | 498 | 624 | 511 | 275 | 447 |
| **Total Low/High Voltage** | 886 | 943 | 888 | 436 | 200 |
| **Totals** | 3,773 | 3,816 | 3,601 | 3,558 | 3,975 |
| **Customers Served** | **3,652,572** | **3,614,717** | **3,574,224** | **3,546,901** | **3,449,653** |
| Complaints per 1000 Customers | 1.03 | 1.06 | 1.01 | 1.00 | 1.15 |

Figure 1 compares ComEd's 2004 customer satisfaction ratings to those of the other reporting jurisdictional utilities. ComEd continues the trend that emerged last year of scoring more in the neighborhood of the other utilities and even exceeding the scoring of several utilities in the residential surveys. Staff will continue to recommend that ComEd focus on improving customer service.

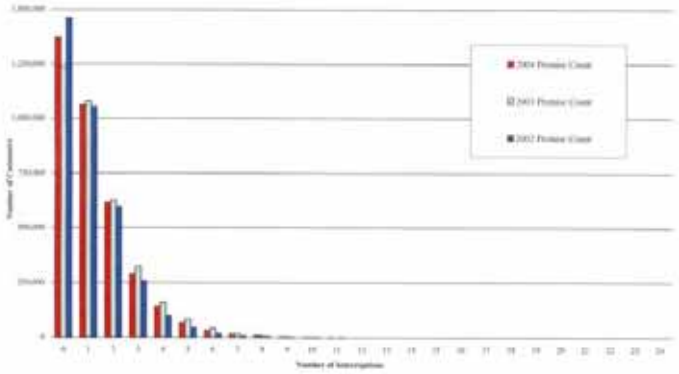
[12] Table 17, Page G-13, ComEd's 2004 Reliability Report

**Figure 1: 2004 Survey Results**




Part 411.120(b)(3)(K) requires the utility to report the total number of customers that experienced a set number of interruptions during 2004. ComEd's graph on Page K-1 of its 2004 Reliability Report (see Figure 2) showed that for the third year in a row more ComEd customers experienced no interruptions than one interruption.

**Figure 2: Customers Interruption Experience in 2004**



Part 411.120(b)(3)(I)&(J) requires the reporting utility to list its worst performing circuits (subsection I) and then state (subsection J) what corrective actions are planned to improve the circuits' performance. ComEd selected its worst performing circuits from those distribution circuits with the worst performance (highest reliability index scores) from each operating area and for each of the three reliability indices. This list totaled 111 circuits, and ComEd classified them as its worst 1% performers. Per subsection J, ComEd listed the date, number of

customers affected, length of time, and cause of each interruption for each of these 111 circuits. All of the work planned for these 111 circuits was to be completed by December 31, 2005.

## Worst Performing Circuit Repeats from Previous Reports

Of the 111 worst performing circuits in ComEd's 2004 Reliability Report, twenty-one[13] (Table 8) represented repeats from either 2003 (11 repeats), 2002 (2 repeats), 2001 (4 repeats), or 2000 (6 repeats).

**Table 7. Worst performing circuit repeats**[14]

| Feeder | Region | Communities Served | Year Repeated From |
|---|---|---|---|
| MALT48 | Chicago | Chicago | 2000 |
| Y8233Y | Chicago | Chicago | 2003, 2000 |
| Z11863 | Chicago | Chicago | 2003 |
| Z1409 | Chicago | Chicago | 2003 |
| Z15054 | Chicago | Chicago | 2000 |
| Z3331 | Chicago | Chicago | 2000 |
| Z4341 | Chicago | Chicago | 2003 |
| Z5535 | Chicago | Chicago | 2003 |
| Z5541 | Chicago | Chicago | 2003 |
| Z6354 | Chicago | Chicago | 2003, 2001 |
| C0913 | Northeast | Ela Twp, Kildeer, Deer Park, Long Grove, Vernon Twp, Buffalo Grove | 2002 |
| C132 | Northeast | Deerfield, Northbrook [Underground] | 2001 |
| C1321 | Northeast | Northbrook [Underground] | 2003 |
| C143 | Northeast | Lake Bluff, Lake Forest | 2003 |
| E532X | Northeast | Schaumburg, Hoffman Estates, Arlington Heights | 2003 |
| E707 | Northeast | Arlington Heights | 2002 |
| W659X | Northeast | Itasca | 2003 |
| E2106 | Northwest | Dorr Twp, Lakewood, Coral Twp, Woodstock, Grafton Twp, Crystal Lake | 2001 |
| E6028Y | Northwest | Elgin, Huntley, Bartlett, Algonquin, Dundee Twp, Carpentersville, Barrington Hills | 2000 |
| W747 | Northwest | Bartlett, Hanover Park [Underground] | 2000 |
| G6979 | Southern | Oak Lawn, Evergreen Park | 2001 |

The Commission is concerned that the number of repeats from previous years may be indicative of inadequacies in inspections and completion of needed corrective actions and subsequent regular preventive maintenance for worst

[13] Up from fourteen the previous year.
[14] See Table 10 for a definition of each reliability statistic

performing circuits from 2000 through 2003. The Commission will be closely following future reports to see how this trend develops.

## Field Inspections

To evaluate the overall trend of conditions in ComEd's service territory, Commission Staff conducted a series of inspections. The purpose of the inspections was for Staff to see if there were any visible obvious reasons for poor reliability performance. For example, on circuits Staff looked for poor tree trimming practices, broken or damaged equipment, rotten poles, overly slack spans (low sagging lines), etc. while in substations Staff looked for low or leaking oil, load tap changers regularly operated at extreme positions, poor maintenance practices, etc.

**Table 8. 2004 Field Inspections**

| Notes | Appendix |
|---|---|
| Random Tree Inspections: "Tree Conditions in Commonwealth Edison Company's Service Territory" | A |
| Random Circuit Inspections | B |
| Worst Performing Circuit Inspections | C |
| Substation Inspections | D |

Summaries of the field inspections, photos and items noted during inspections are included in this report as Attachments A, B, C, and D. The summary for each inspection represents typical observations noted during the field inspections and **does not** represent all of the problems or potential problems that may exist.

## Conclusions from Field Inspections

### Tree Conditions

While overall the tree-trimming program has improved, it is still inadequate in some locations (Appendix A). The report in Appendix A noted some inconsistencies in practice that didn't insure adequate tree clearance over the term of ComEd's four year maintenance cycle and provided three recommendations for ComEd to address in the future.

As ComEd continues to make progress in re-establishing the trim zones and removing dead wood above conductors of its distribution circuits ComEd should begin placing more emphasis on problem trees. Problem trees are those under the conductors that are fast growing or candidates for removal and hazard[15] trees. By addressing problem trees sooner rather than later, ComEd can moderate future costs of vegetation management while improving reliability.

[15] Trees that are outside the trim zone but that could affect reliability.

Customer education programs on the consequences of planting some varieties of trees underneath or near overhead conductors could help eliminate the introduction of many future problem trees and thus reduce future costs and reliability issues. This could also be an opportunity for ComEd to improve customer satisfaction as illustrated by Staff's meeting with a customer during inspection of the worst performing circuit G657 (Appendix C). The customer was upset because (1) he believed he had not receive adequate information from ComEd ahead of time and (2) when the amount of trimming necessary on his Magnolia tree became apparent he would have preferred the tree had been removed completely.[16] Over the long term improved communications with customers and tree replacements where cost effective will increase customer satisfaction as well as the reliability they [and their neighbors] experience.

**Circuit Conditions**

Random Circuit Inspections

In some cases Staff noted the conditions of portions of circuits randomly observed by Staff while in travel within ComEd's service territory, going to and from locations of worst performing circuits, or while evaluating vegetation conditions in randomly picked areas. Staff observed some deficiencies (such as blown lightning arrestors, shell rotted poles, loose bolts, split or bad crossarms, and trees into the primary) that appear to be on par with the levels observed in previous years. See Pictures 1 and 2 or Appendix B.

**Picture 1 – Broken Wood Brace**

**Picture 2 – Trees in Primary**

[16] ComEd does have a limited tree replacement program see: http://www.exeloncorp.com/ourcompanies/comed/comedres/energy_education/tree_and_vegetation_services/trimming_away_danger.htm but apparently the customer was unaware of the program or it didn't apply to his circumstances.

Worst Performing Circuit Inspections

Because of the prevalence of worst performing circuit repeats from year to year ComEd worked to complete corrective maintenance on the 2004 worst performing circuits by the end of June 2005. While in the field during June, Staff observed many instances of crews working on deficiencies of those circuits especially in the areas of vegetation management and the replacement of poles. While Staff still observed some material deficiencies such as hardware and pole conditions as well as some vegetation issues (see Appendix C or pictures 3 and 4 for examples) the number of instances appeared to be at levels below those observed in previous years. This should have the benefit of improving the reliability experienced by customers and minimizing the instances of circuits appearing as worst performers in consecutive years. In addition, ComEd now identifies and analyzes circuits needing improvement on a 12 month rolling basis which should translate in improved service reliability in the future.

**Picture 3 – Broken Insulator**

**Picture 4 – Broken Cross Arm Support**

As another general note, in a few instances Staff observed that guy markers were missing. While this is more of a public safety concern than a reliability concern, Staff urges ComEd to replace missing guy markers on its downguys wherever they are exposed to public or private traffic. Staff notes that the number of occurrences of missing guy markers observed this year was significantly diminished from previous years.

## Substation Conditions

Staff observed some material condition deficiencies such as equipment oil leaks, load tap changers operated at extreme positions, rust and/or bad paint on equipment, missing and/or disconnected cooling fans, trash and/or dirt on

equipment cooling radiators, high oil levels in some breakers and bushings (though it was noted on one of the hottest days of the year and levels should be high normal), equipment connections to the ground mat running over the surface of the substation yard, birds nests on/in equipment, difficult to read gauges because of either poor placement or paint and/or other materials obscuring the gauges.

During inspections Staff paid particular attention to defects such as low oil or leaking oil problems in devices, particularly bushings which contain very little oil under normal conditions. An amount of oil lost via a small leak from a large power transformer that would be inconsequential from a reliability perspective could have serious implications for a low volume device such as a transformer bushing if not timely found and corrected because the risk of catastrophic failure increases when air replaces the oil. High oil levels in power equipment can also be a problem that leads to damaging of equipment during high loading periods.

The most dramatic situation observed was the active venting of oil from a transformer load tap changer ("LTC") compartment (not the bushings) at TDC 550 Clearing Substation during Staff's inspection of the substation. The leak was from the area circled in Picture 5. ComEd personnel were aware of and were addressing the problem and from a reliability perspective everything appeared under control. Staff notes that ComEd could have saved some cleanup effort later if the leaking oil had been collected and contained rather than allowed to splash over control panels and nearby equipment.

**Picture 5 – Leaking Transformer**

On a number of occasions Staff observed that load tap changers had been operated at extreme positions (see Picture 6) which could over time tend to wear of the equipment sooner and require more attention from personnel in order to maintain reliable operation. ComEd has indicated that they are aware of this

problem and its prevalence and are working to take appropriate corrective action[17]. Staff will be following these LTC issues in the future.

**Picture 6 – LTC Operated at Extreme Lower Limit and Neutral**

On all inspections Staff would assess the condition and appearance of the substation and yard (i.e. substation housekeeping). Staff noted that Substations that were located in Chicago or the Southern region tended to have more weeds, trash and loose construction material laying about in the yard in comparison to substations located in the Northwest or Northeast regions. It has been Staff's experience that over time substation housekeeping is one indicator of the degree personnel feel responsible for maintaining the equipment at a substation. That being said, Staff observed the general condition of the substations and equipment inspected has improved while substation housekeeping has improved dramatically since 1999.

Staff recommends that ComEd inspect insulating oil levels of substation equipment as appropriate and make adjustments as necessary.

## 8. Trends in ComEd's Reliability Performance

This is ComEd's seventh annual reliability report filed pursuant to code part 411. Listed in Table 10 are ComEd's reliability indices as reported in the 2004 Reliability Report (for all interruptions) for ComEd's overall system as well as each region in comparison to the system values reported by the other jurisdictional utilities for 2004. ComEd's system CAIDI performance ranks fourth[18] (out of the nine jurisdictional utilities) behind South Beloit, MidAmerican, and Interstate, while ComEd's system SAIFI ranked third[19] behind Interstate and South Beloit. When ComEd's four regions are compared to the nine jurisdictional utilities and each other, the regions' performance stays bunched in the upper (better) half of the range for CAIDI except for the Southern Region that moves to eleventh (worse) for

[17] ComEd response to data request JVS 3.1 on Nov. 17, 2005.
[18] Up (better) from sixth last year.
[19] Down (worse) from second last year.

CAIFI and SAIFI. ComEd's Northeast region CAIDI performance ranks best of the four ComEd regions at 110 minutes[20], while ComEd's Southern region ranks worst at 154 minutes[21]. ComEd's Chicago region SAIFI performance ranks best of the four ComEd regions at 0.83 interruptions[22] while the Southern region ranks worst at 1.74 interruptions[23].

**Table 9 Comparison of reliability indices for 2004**

| | CAIDI (minutes) | CAIFI (interruptions) | SAIFI (interruptions) |
|---|---|---|---|
| ComEd System Total | 128 | 2.00 | 1.21 |
| ComEd Chicago Region | 128 | 1.66 | 0.83 |
| ComEd Northeast Region | 110 | 1.88 | 1.15 |
| ComEd Southern Region | 154 | 2.34 | 1.74 |
| ComEd Northwest Region | 113 | 1.99 | 1.34 |
| | | | |
| AmerenCIPS | 143 | 2.01 | 1.66 |
| AmerenUE | 278 | 2.05 | 1.69 |
| AmerenCILCO | 247 | 2.03 | 1.45 |
| Illinois Power | 268 | 2.26 | 1.49 |
| MidAmerican | 69.59 | 2.716 | 2.028 |
| Interstate | 77.2 | 1.4 | 0.64 |
| Mt. Carmel | 177.06 | 2.86 | 2.69 |
| South Beloit | 96 | 1.35 | 0.61 |

CAIDI: Customer Average Interruption Duration Report (cay' dee). This represents, for the group of customers that actually had one or more interruptions, how long, on average, the interruptions lasted.

CAIFI: Customer Average Interruption Frequency Index (cay' fee). This represents the interruption frequency for the group of customers that had interruptions. **A CAIFI index much higher than SAIFI suggests that subsets of customers experienced significantly more frequent interruptions than the overall system average.**

SAIFI: System Average Interruption Frequency Index (say' fee). This represents the number of customer interruptions divided by total system customers.

The reliability indices required by the Commission rules and provided by ComEd include storm related interruptions. Staff expects that the better designed and maintained an electric system is, the smaller the number or magnitude of storm related problems and the quicker the restoration of the electric system would be,

[20] And fourth best out of twelve in the state of Illinois when the regions are compared to the eight jurisdictional utilities (beside ComEd)

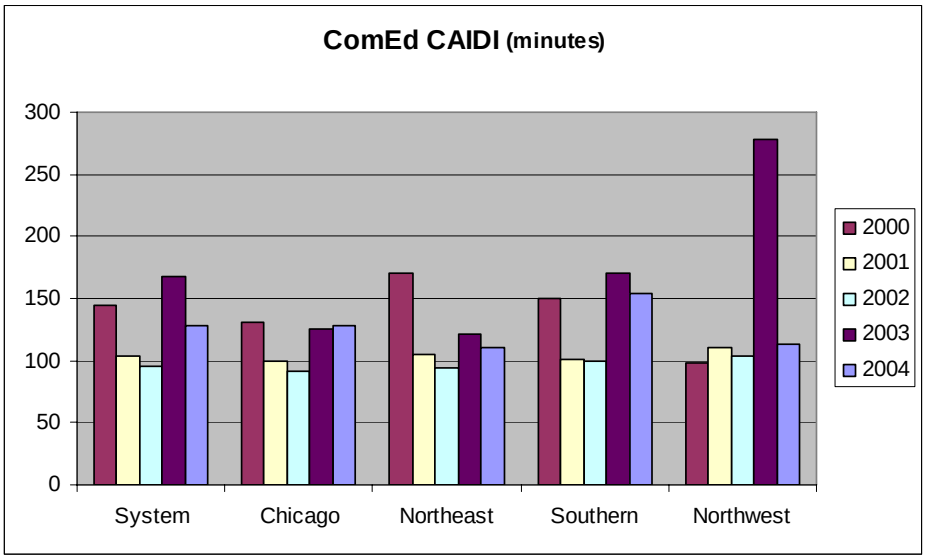
[21] And eighth best out of twelve in the state of Illinois when the regions are compared to the eight jurisdictional utilities (beside ComEd)

[22] And third best out of twelve in the state of Illinois when the regions are compared to the eight jurisdictional utilities (beside ComEd)

[23] And tenth best out of twelve in the state of Illinois when the regions are compared to the eight jurisdictional utilities (beside ComEd)

resulting in a lower average customer interruption time ("CAIDI index"). Figure 4 illustrates ComEd's CAIDI indices over the last five years in each region.

**Figure 4: ComEd CAIDI**




In Figure 4 above, except for the Chicago region, all regions have improved their CAIDI performance from the previous year.

**Figure 5: CAIDI by Utility**

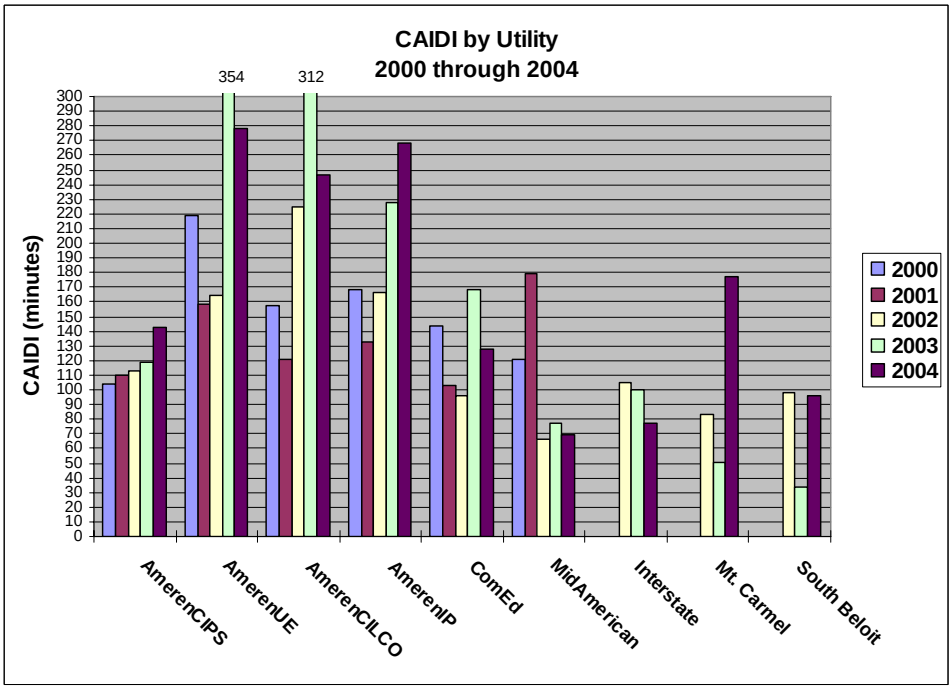



Figure 5 shows a comparison of CAIDI values reported for the years 2000, 2001, 2002, 2003 and 2004 by the jurisdictional utilities. In 2004 ComEd improved to

fourth place (from sixth place in 2003) compared to the other jurisdictional utilities.

**Figure 6: Worst-Circuit CAIDI by Utility**

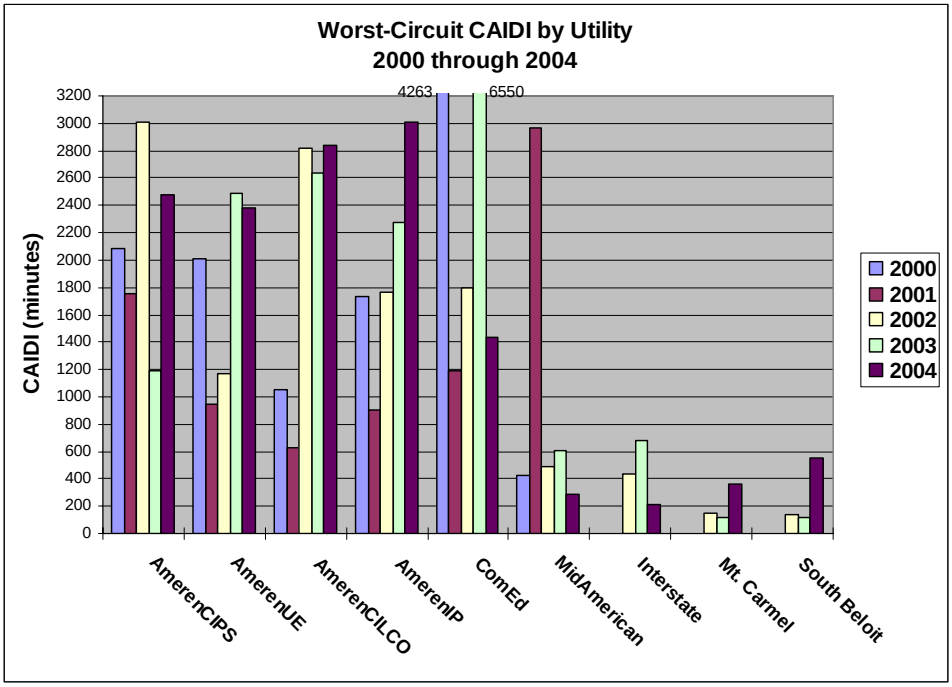
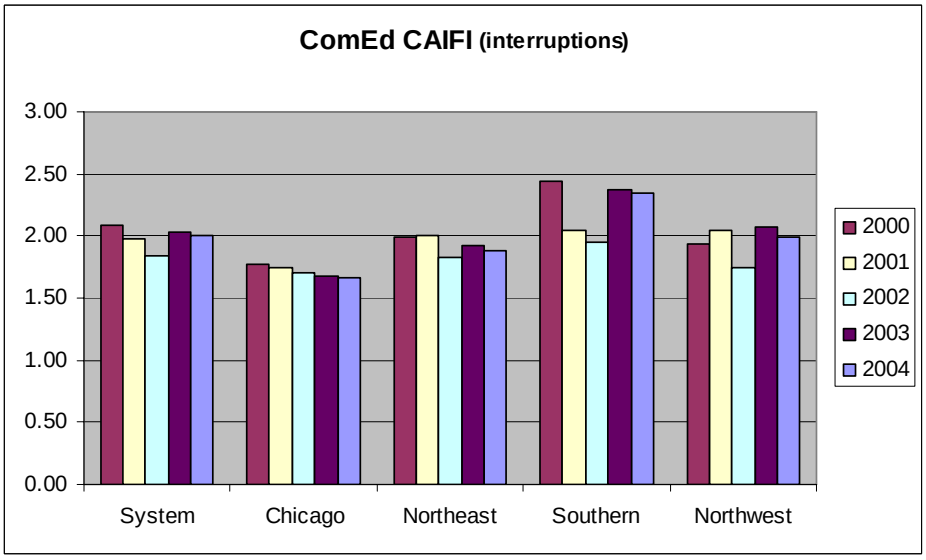



Figure 6 above shows a comparison of CAIDI values for the worst circuit for each of the jurisdictional utilities. Figure 6 clearly shows that ComEd's worst-circuit CAIDI performance improved substantially in 2004 from the previous year and ComEd now ranks better than the Ameren companies worst-circuit CAIDI's.

**Figure 7: ComEd CAIFI**



In Figure 7, only the Chicago region has shown consistent year-by-year progress since 2000. The other regions showed improved (decreasing interruption) levels of CAIFI from 2003.

**Figure 8: CAIFI by Utility**

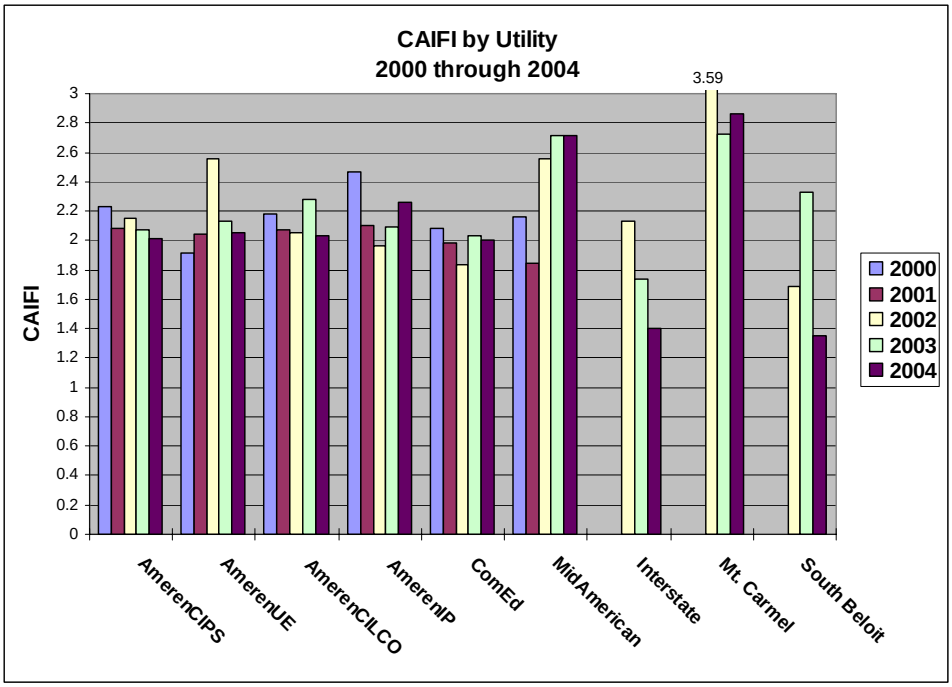



Figure 8 above shows a comparison of CAIFI values reported for the years 2000 through 2004 by the jurisdictional utilities. In 2004, ComEd had the third best (out of nine) ranking for CAIFI amongst the other jurisdictional utilities – a drop from second best in 2003.

**Figure 9: Worst-Circuit CAIFI by Utility**

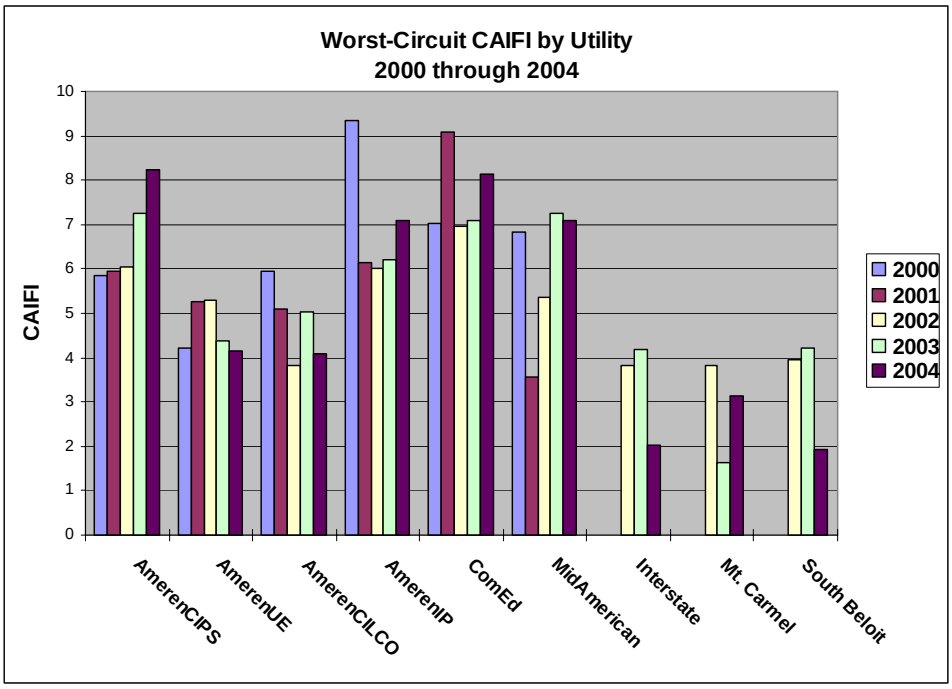



Figure 9 shows a comparison of CAIFI values for the worst circuit for each of the jurisdictional utilities. In 2004, ComEd fell from seventh place in 2003 to eighth place among the nine jurisdictional utilities, with only AmerenCIPS performing worse in this category in 2004.

**Figure 10: ComEd SAIFI**

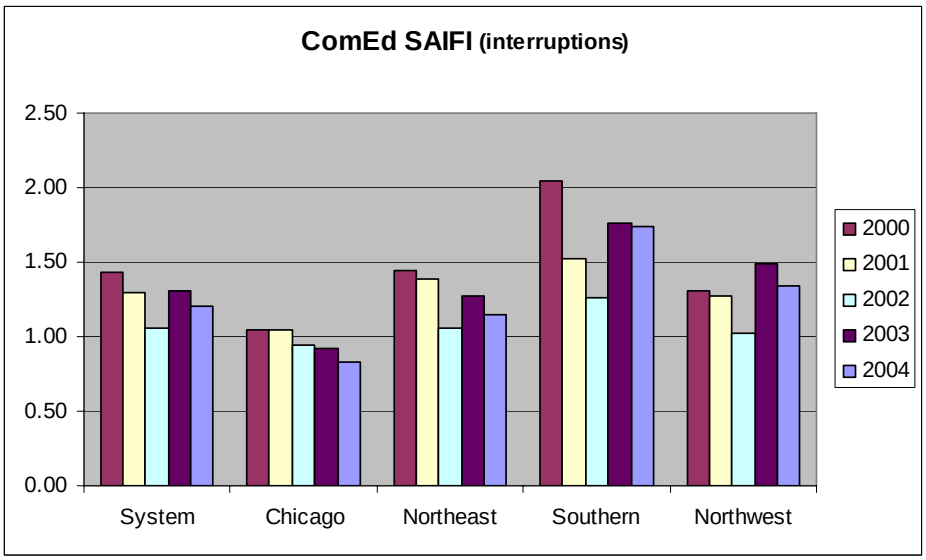



Figure 10 above shows that only the Chicago Region has demonstrated a consistent year-to-year improvement (lower number of interruptions) in SAIFI

since 2000. The other regions do show improvement from 2003 to 2004 but their level of interruptions in 2004 is still not as good (low) as they were in 2002.

**Figure 11: SAIFI by Utility**

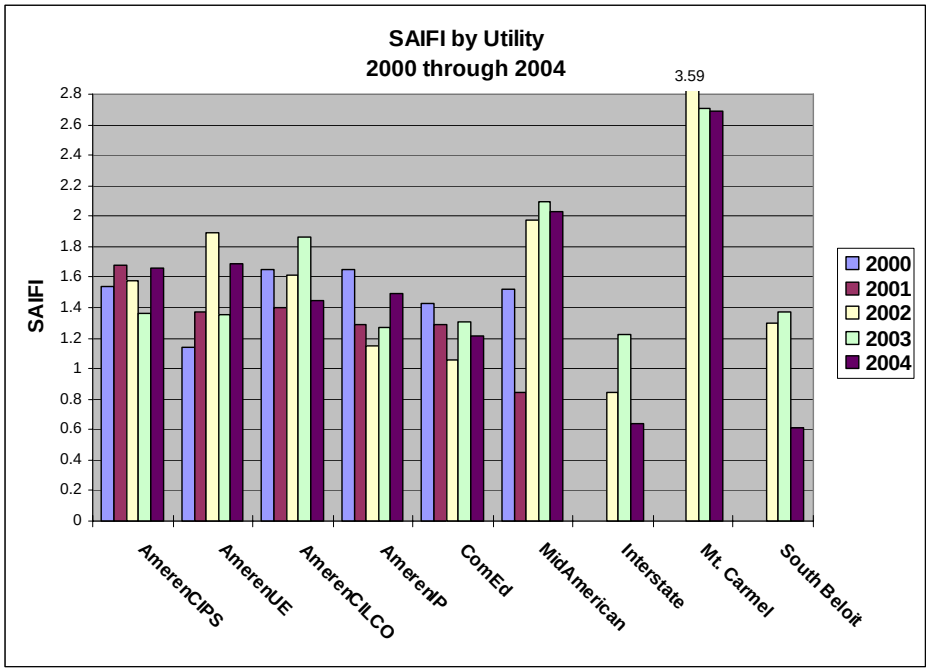



Figure 11 above shows a comparison of SAIFI values reported for the years 2000 through 2004 by the jurisdictional utilities. In 2004 ComEd rank third best (third lowest number of interruptions) out of nine amongst the jurisdictional utilities.

**Figure 12: Worst-Circuit SAIFI by Utility**

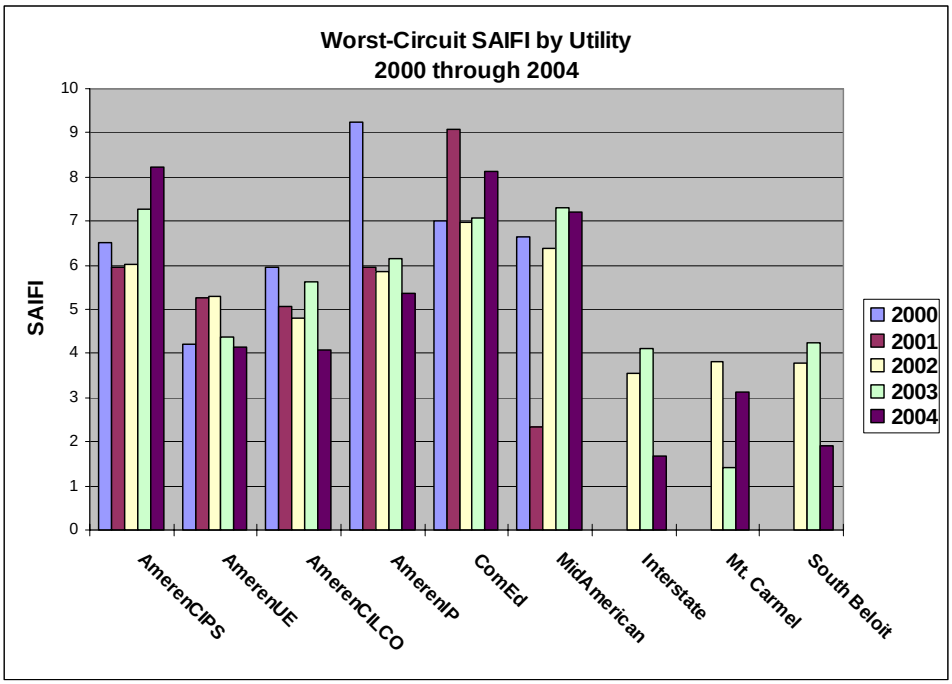
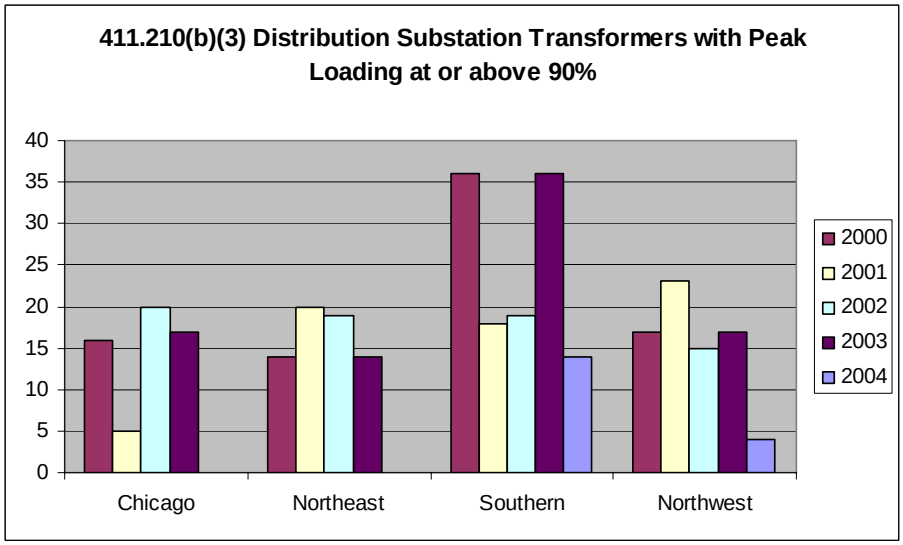



Figure 12 shows a comparison of SAIFI values for the worst circuit for each jurisdictional utility. ComEd's worst-circuit SAIFI ranking was eighth (out of nine) place of the jurisdictional utilities for 2004 with only AmerenCIPS performing worse.

Part 411.210(b)(3) states that each utility having 1,000,000 or more customers is to provide a list of substation transformers that had a peak loading that equaled or exceeded 90% of their rated normal capacity.

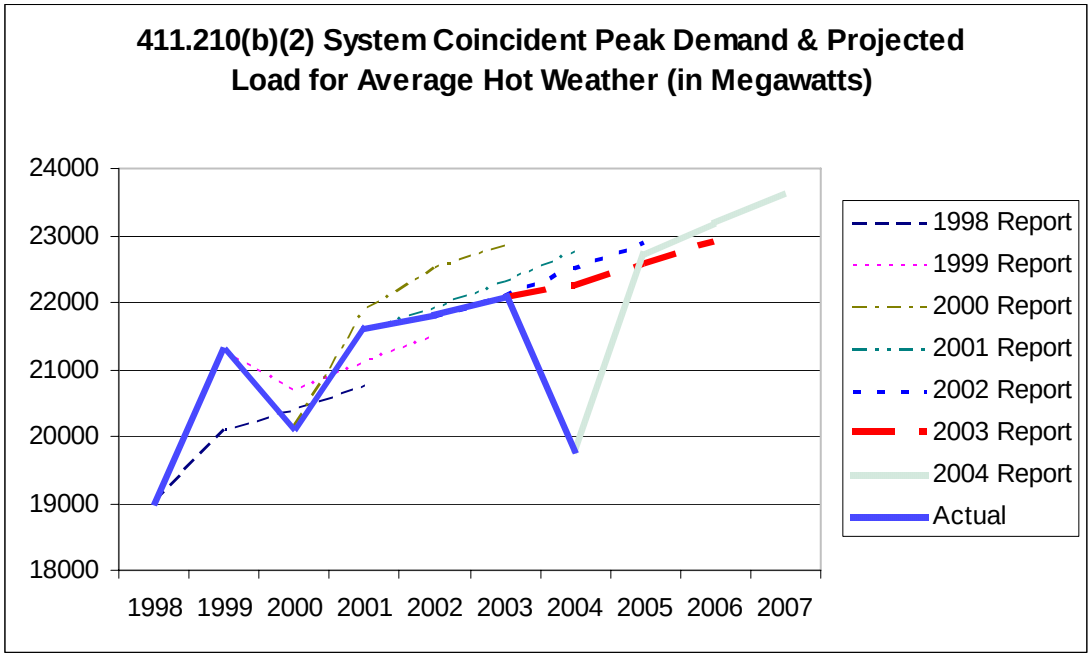
**Figure 13: Distribution Substation Transformers Loading**



In Figure 13 Staff notes that the number of transformers with peak loadings in 2004 at or above 90% decreased substantially[24] for all of ComEd's regions from levels in previous years. Much of this year's improvement may be attributed to a peak load that was significantly lower than expected (see Figure 14) – the 2004 peak load was roughly 7% below the 1999 peak. A part of the improvement should also be attributed to the build-up and spending on O&M and capital additions in the recent past.

Staff is concerned that high transformer loadings can impact reliability in two ways: (1) when a substation transformer is loaded over its normal capacity rating for a length of time, the likelihood that the transformer may fail increases[25] due to the cumulative thermal deterioration from overloading; and (2) when a transformer is highly loaded, this removes system reconfiguration flexibility when other failures occur in the system or when greater than expected load growth occurs.

**Figure 14: Peak Demand and Projected**



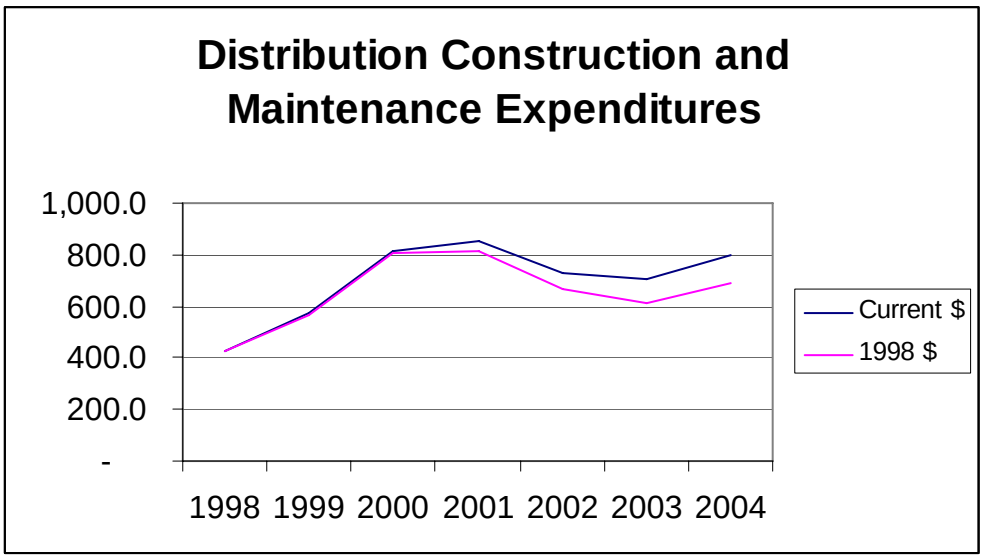

## 9. ComEd's Plan to Maintain or Improve Reliability

To understand the trend in real dollars for expenditures Staff turned to the information from Part 411.120(b)(3)(G)(iii & iv). Figures 15 and 16 displays "Construction and Maintenance Expenditures" in current and constant dollars for Distribution and Transmission respectively. From 1998 to 2004 distribution

[24] In the Chicago and Northeast regions there were no distribution substation transformers with peak loadings at or above 90% in 2004.
[25] The dielectric strength of the insulating paper will deteriorate due to heating making the transformer more susceptible to failure on a cumulative basis.

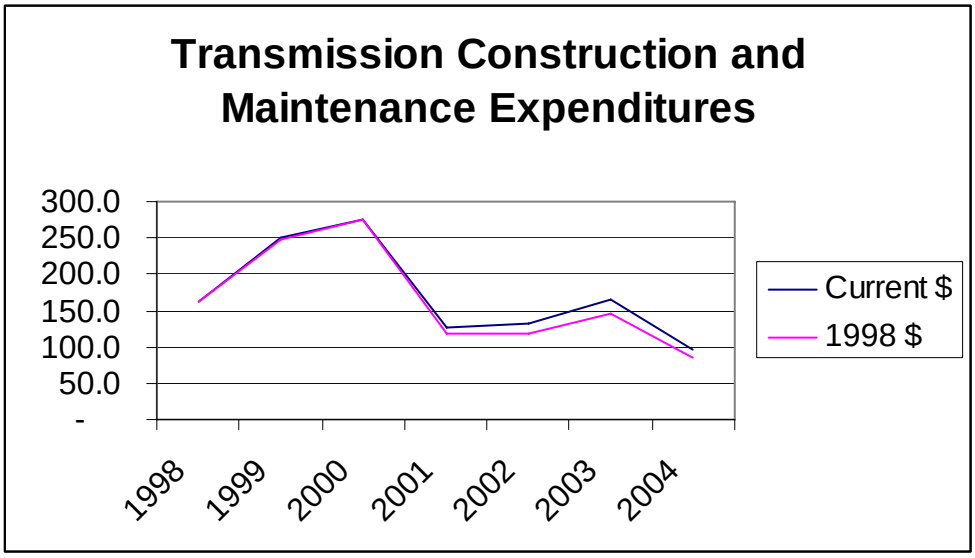
construction and maintenance expenditures show a positive real growth rate (an annual compound rate of 8.47% based on constant 1998 dollars from 1998 to the 2004 level). The overall growth from 1998 is apparent in Figure 15 with the heavy ramp up of activity visible in 1999 through 2001 followed by subsequent declines in 2002 and 2003 before turning up again in 2004.

**Figure 15: Dist Construction & Maintenance Expenditures**



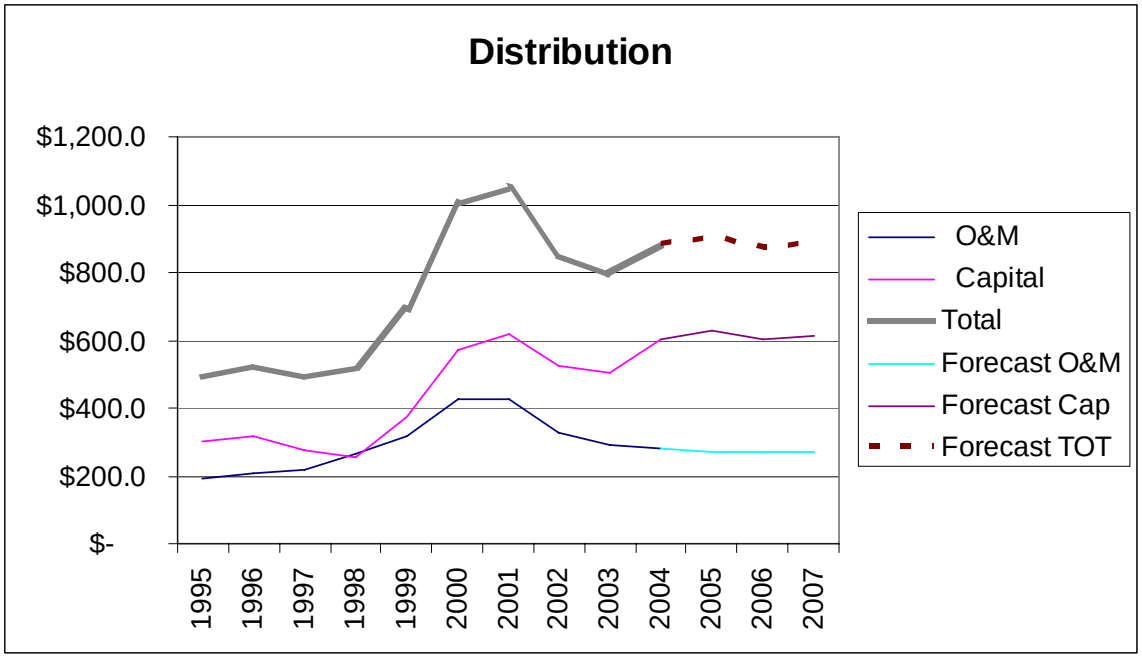

On the other hand, transmission construction and maintenance expenditures show a negative overall growth rate (-10.3% compound growth rate from 1998 to 2004) from 1998 to 2004 in constant 1998 dollars. Figure 16 does show that there was a sizable buildup of expenditures in 1999 and 2000 before trailing off to below 1998 levels.

**Figure 16: Trans Construction and Maintenance Expenditures**



Staff believes the overall decline shown in Figure 16 should be viewed as a flag during further review. Part 411.120(b)(3)(A) states that the utility is to include a future investment plan within its report. Pages A-1 through A-8 of the 2004 Reliability Report detail ComEd's plans for future investment. A detailed analysis[26] of actual and projected spending patterns from 1995 through 2007 is illustrated in Figures 17, 18 and 19. All three Figures show the spikes in spending in the 1999 through 2001 period to address the deficiencies of the power delivery infrastructure manifested in 1998 and 1999. In Figure 17 it is clear that, at least in nominal dollars, spending for distribution O&M and capital is trending upward and that projected spending for 2007 represents a value that would equal a compounded annual rate of 2.9% and 6.1% respectively from 1995. 1995 is used for comparison because the spending patterns in the mid 1990's were a precursor to the reliability problems of 1999. Similarities between patterns in the mid 1990's and current or future patterns should be a flag for further analysis and not taken as proof that there is indeed a problem.

**Figure 17: Dist O&M and Capital Expenditures and Forecast**




The trend in Figure 18 shows a very flat annual compound growth rate of 0.3% from 1995 to 2007 for transmission O&M with a robust over 8% rate for the same period for transmission capital exceeding in 2007 capital expenditures in 2000 during the height of ComEd's rebuild. Transmission capital expenditures also

[26] Responses to Y1999 ComEd Report Data Requests ENG 1.7-1.10; Y2000 ComEd Report Data Requests ENG 1.6-1.11, 1.10R1, 1.11R1; Y2001 ComEd Report Data Requests ENG 3.6-3.11; Y2002 ComEd Report Data Requests ENG 3.6-3.11; Y2003 ComEd Report Data Request ENG 3.6-3.11.

began ramping up in 1997 and 1998 while distribution capital expenditures declined during that period before ramping up starting in 1999.

**Figure 18: Trans O&M and Capital Expenditures and Forecast**

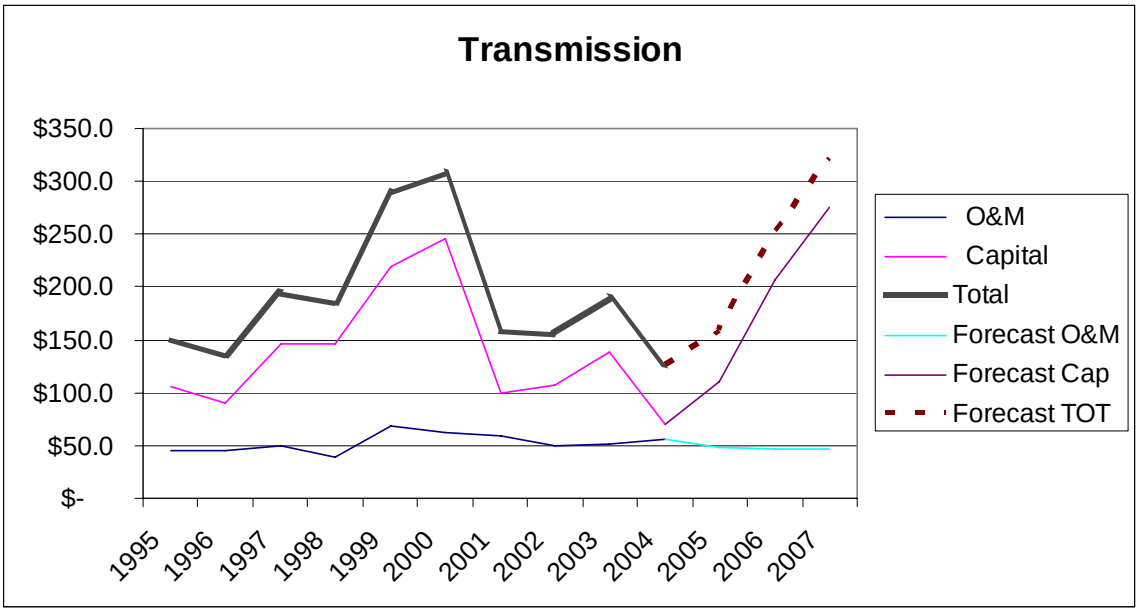
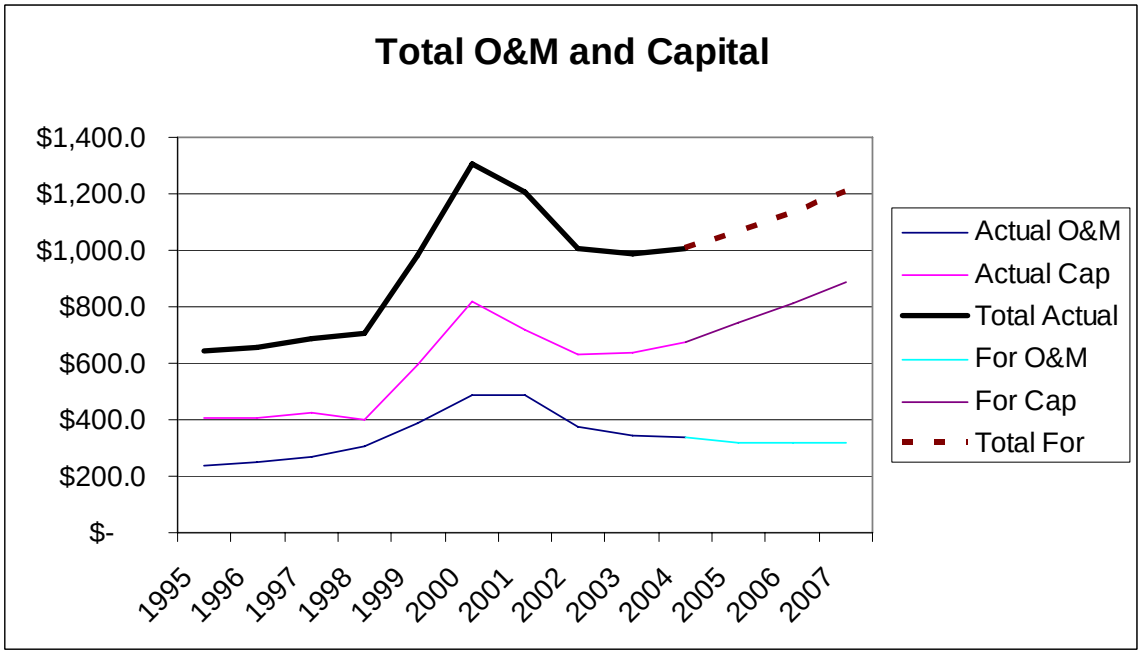



Figure 19 is a combination of actual and projected nominal expenditures for transmission and distribution. In figure 19 it is clear that in nominal dollars Total O&M and Capital will nearly double from 1995 to 2007.

**Figure 19: Total O&M and Capital Expenditures and Forecast**



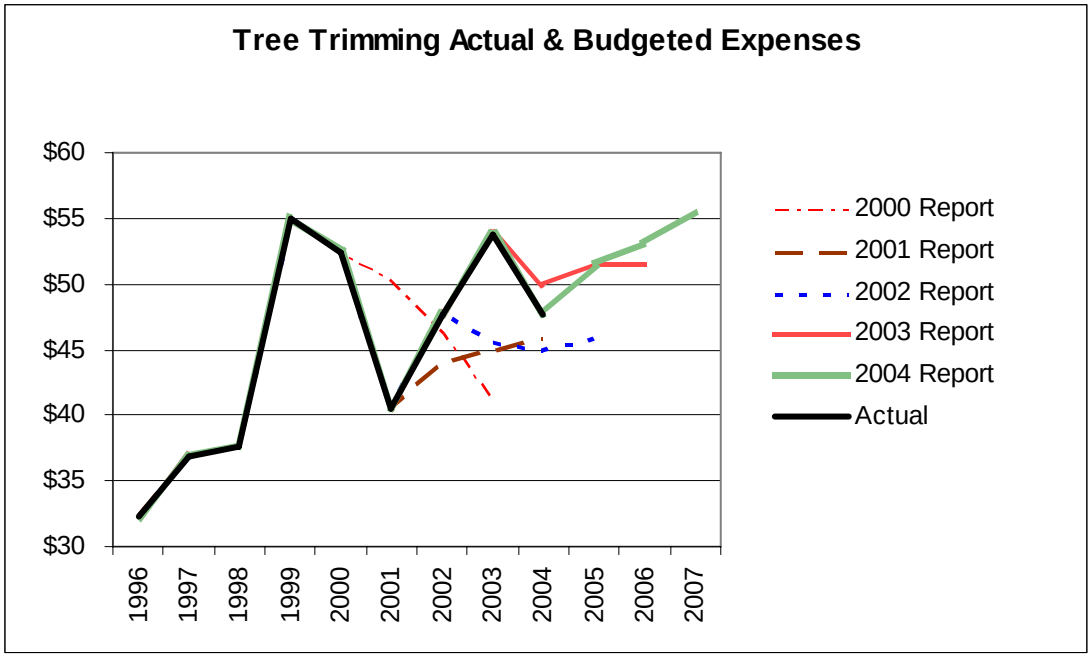
Trends in spending levels alone do not tell the Commission how well ComEd is addressing reliability issues unless the Commission has some indication of how efficiently those spending patterns are being applied. For example, if all else was equal then spending patterns similar to those in the mid 1990's would be a cause for alarm because the spending patterns of the mid 1990's were a precursor to the reliability problems of 1999.

On page A-1 of the reliability report, ComEd states that it "is constantly striving for ways to improve operating efficiencies and internal processes." Indicators of efficiency coupled with reviews of spending patterns, spending levels and inspections by Staff of actual conditions in the field with their assessment if the work is getting done that should be done is the most effective way to determine the status of plans to improve reliability. Staff recommends that in the future Staff continue regular inspections of conditions in the field coupled with monitoring emerging spending patterns as well as indicators of efficiency improvements.

Figure 20 illustrates the actual tree trimming expenses from 1996 through 2004 as well as the three year forecasts associated with the current and previous report analyses. Staff is concerned that in response to Staff data request ENG 3.5 ComEd said on June 10, 2005, that "No data available" for 2007 projected spending levels. Staff found it absurd that ComEd has no idea in mid 2005 the magnitude of money it would be spending in 2007 on its vegetation management activities. Staff notes that a simple linear regression of actual data plus the known budget and projections for 2005 and 2006 yielded an estimate of $56 million for 2007. Six months later on December 9, 2005, ComEd provided an updated response to ENG 3.5 showing a spending level of $55.5 million for 2007[27]. The quality as well as quantity of vegetation management can significantly impact the number of customer experienced interruptions. Staff plans to closely follow this issue in the future.

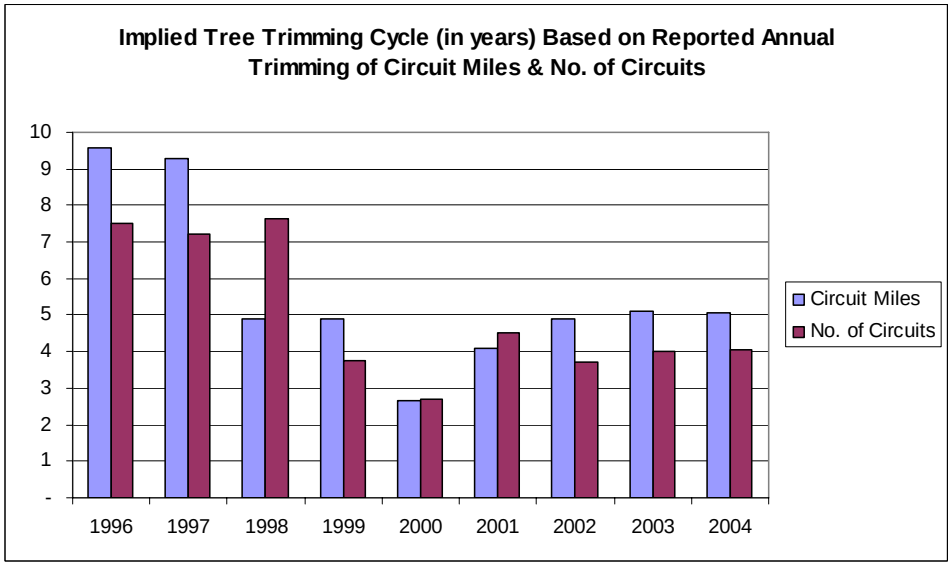
[27] ComEd indicates they forecast the vegetation management program costs based on actual work scopes year-over-year in order to achieve the four-year cycle. Each year the work scope is different based on completing specific circuits in geographically diverse regions.

**Figure 20: Tree Trimming Actual and Budgeted Expenses**




Since May 18, 2000, ComEd has claimed to be on a four year tree trimming cycle. In reviewing the data illustrated in Figure 21 of the implied tree trimming cycle (in years) based on reported annual trimming of circuit miles and the number of circuits trimmed each year one would conclude, assuming there are no quality[28] issues, that based on the number of circuit trimmed each year that ComEd was on a four year trim cycle.

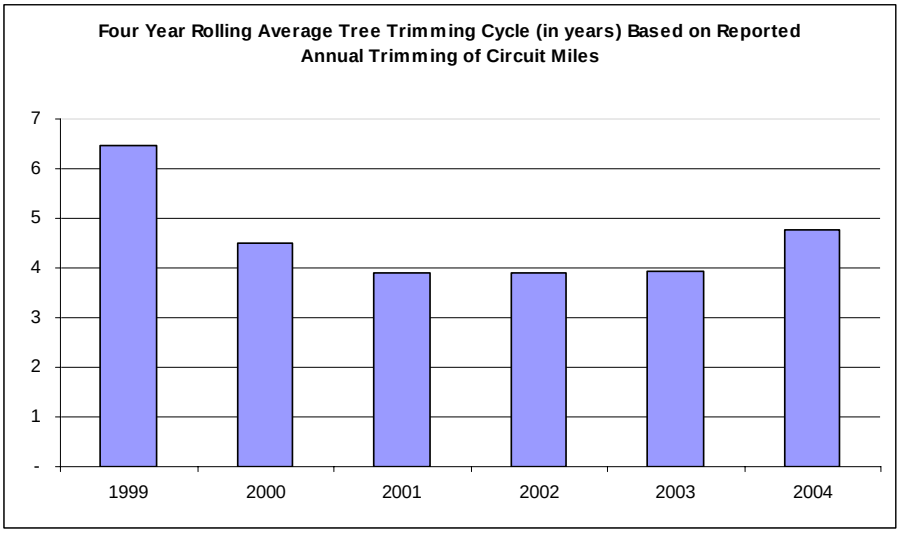
**Figure 21: Implied Tree Trimming Cycles**




[28] See section 7 and the appendices of this report for discussions of quality issues.

In Figure 22 the four year rolling average tree trimming cycle (in years) based on reported annual trimming of circuit miles declined from over six years in 1999 to under four years in 2001 through 2003 and then increased to under 5 years in 2005. This implies that ComEd will have to increase it's level of activity in future years in order to maintain a four year cycle. The forecast shown in Figure 20 tends to confirm this conclusion.

**Figure 22: Four Year Rolling Average Tree Trimming Cycle**




Yet, Staff's field observations, discussed in section 7 of this report, lead Staff to conclude that a four year trim cycle has not yet been sustained at a reasonable level of quality. ComEd will need improve efficiencies significantly if a four year trim cycle is to be achieved at a reasonable level of quality. Staff will continue to closely monitor this issue.

## 10. Potential Reliability Problems and Risks

Adequate preventive and corrective maintenance programs, which include a well planned vegetation management program, are the most important factors to influence long-term customer reliability. Unfortunately, maintenance programs are one area where a company can cut spending quickly and have an immediate impact on short-term income statement performance with minimal impact on short-term reliability performance[29]. Staff will continue to closely follow trends in this area while also encouraging ComEd's efforts to improve efficiencies and economies of maintenance and operations.

[29] Staff would expect a delay of up to several years between when maintenance expenditures are cut and when material impacts will be apparent in reliability performance. An analogy would be the depressed spending levels for distribution in 1995-1998 and the service reliability problems of 1999-2000.

Table 4 shows for the year 2004 that 46%[30] of ComEd's interruptions were weather, tree or animal related. Staff believes that a large number of these interruptions could be eliminated or moderated by effective tree and vegetation management programs in addition to effective animal protection programs.

The poor performance of ComEd's worst-circuit in relation to the worst-circuit of other jurisdictional utilities for 2004 in Figures 6, 9, and 12 remains a matter of concern for Staff. Figures 6, 9, and 12 clearly show that potential exists for continued reliability improvement while demonstrating the existence of significant risk for future reliability problems. Staff will continue to closely follow developments in this area.

While reviewing trends[31] in emergence of new distribution corrective maintenance tasks Staff noted a sharp upswing in emerging tasks over the previous year. This is feeding a corresponding increase in backlogs of corrective maintenance. The general explanation appears to be that as the result of increased training and the expansion of the scope of items being inspected ComEd inspectors are in effect looking harder and are finding more items needing correction – which Staff would expect at least over the time it takes to complete a full cycle of inspections under the new procedures. Staff commends ComEd's initiative in this regard and encourages ComEd's continued intense inspections. Staff views this as a good sign especially in light of the increasing number of corrective maintenance items completed on a monthly basis in spite of an overall decline in workforce levels[32]. The higher corrective maintenance completion rates are slowing down the backlog increases and once the full cycle of inspections are completed the higher completion rates, if maintained, should enable the backlog to be worked down. The higher completion rates coupled with the decline in workforce levels implies that there have been improvements in efficiency. While it's too early to tell if this short term trend of efficiency improvement is a real trend that will last Staff does find it encouraging. Staff is concerned that if efficiency improvements should plateau and/or workforce levels decline to far and/or maintenance budgets are not adequate then ComEd would have a strong incentive to cut back on the intensity of inspections in order to reduce the backlog of corrective maintenance work.[33] Staff will continue to closely follow ComEd's progress in identifying and working through preventative and corrective maintenance tasks and ultimately working down their backlogs.

Since May 18, 2000, ComEd has claimed to be on a four-year tree trimming cycle. Staff's field observations, recorded in the appendices and discussed in Section 7 of

[30] Which is down from 51% in the 2003 report assessment.
[31] ComEd response to data request JVS 3.2 on 11-30-2005.
[32] ComEd response to data request JVS 4.1 and JVS 4.2 on 12-5-2005 and ENG 3.17 and 3.18 on 6-23-2005.
[33] As a result of the January 29, 1991, Bellwood Bus Accident ComEd initiated an intense inspection effort of its entire overhead distribution system beginning on July 1, 1991, and to be completed over a four year cycle. Later, ComEd reduced the intensity (number of items inspected) of the inspections and increased the term of the inspection cycle to eight years.

this report, indicate that, while overall the tree-trimming program continues to improved, it is still inadequate in some locations highlighting that the potential remains for improvement in ComEd's vegetation management program. In reviewing ComEd's tree trimming actual and budgeted expenses (Figure 20), Staff noted concern in Section 9 of this report that ComEd was unable to initially provide a forecast for their spending levels in 2007. ComEd did provide their 2007 estimate six months later. Staff remains unconvinced that a sustained four-year trim cycle has been achieved by ComEd at a reasonable quality level. As ComEd continues to make progress in re-establishing appropriate trim zones around conductors Staff believes ComEd should begin placing more emphasis on problem trees in order to moderate future costs of vegetation management while improving reliability.[34] Staff recommends that ComEd continue improving its vegetation management program. Staff will continue to closely follow developments in this area.

## 11. Review of ComEd's Implementation Plan for the Previous Reporting Period

A report on the significant deviations from ComEd's 2003 plan was included in its 2004 reliability report in pages B-1 through B-6. The deviations from the plan seemed reasonable.

## 12. Summary of Recommendations

Staff recommends that ComEd take the following actions:

- Continue its focus on improving customer service.
- Continue improving its vegetation management program and address the concerns of Staff in the vegetation management report [Appendix A].
- Inspect insulating oil levels of substation equipment as appropriate and make adjustments as necessary.

[34] See "Conclusions from Field Inspections" in this report.

# MEMORANDUM

TO: Roy Buxton, Engineering Department Manager

FROM: Jim Spencer, Senior Electrical Engineer

DATE: September 27, 2005

RE: Tree Conditions in ComEd's Service Territory

## 1. Introduction

During May, August, and September 2005, I performed random inspections of tree conditions near ComEd overhead electric lines in fourteen cities served by ComEd. I was accompanied by Greg Rockrohr in Sterling and Dixon on May 19, 2005, and by ComEd personnel on all of the inspections as indicated below:

| Date(s) | Location(s) | Accompanying ComEd Personnel |
|---|---|---|
| 5/19/05 | Sterling & Dixon | Ed Cunningham & Mary Vincent |
| 8/31/05 | Belvidere | Merle Turner & John Parise |
| 8/31/05 | Woodstock & Algonquin | Merle Turner & John Parise |
| 9/1/05 | Aurora | Merle Turner & Mary Vincent |
| 9/1/05 | Darien & Downers Grove | Merle Turner & Mary Vincent |
| 9/12/05 | Berwyn & Oak Lawn | Merle Turner & Mary Vincent |
| 9/12/05 | Tinley Park | Merle Turner & Mary Vincent |
| 9/13/05 | Joliet | Ed Cunningham & Mary Vincent |
| 9/13/05 | Streator | Ed Cunningham & Mary Vincent |
| 9/13/05 | Pontiac | Ed Cunningham & Mary Vincent |

I performed the inspections by driving around the areas chosen and looking at trees near ComEd overhead electric lines without regard to circuit identification and without the use of circuit maps. This memorandum documents the results of the field inspections and my assessment of the state of tree trimming on those dates in the fourteen communities inspected. Example photographs of some of the more severe tree conflicts noted are included in Attachment "A" to this memorandum.

Due to budget constraints, these inspections are the only random tree inspections that have been performed by Staff in ComEd's service territory to date in 2005. I chose the above cities for inspection because I had not looked at tree trimming conditions in any of them before and they provide a fairly wide geographic diversity within the area of Illinois served by ComEd. While the area covered by these inspections represents only a small portion of ComEd's service territory, I believe it is reasonable to expect that the tree trimming conditions observed in the variety of communities chosen for these inspections are representative of what is likely to be found in many of the other communities served by ComEd.

## 2. Findings

Tree trimming in the western half of Sterling was well done. There were several areas of tree conflicts with ComEd circuits in the eastern half of the town, however, which I noted and photographed. Some of those tree conflicts were severe. My notes of the tree inspection in Sterling are summarized in Table 1 below. See Figures 1, 2, & 3 in Attachment "A" for example photographs of some of the tree conflicts. ComEd reported that these areas in Sterling were last trimmed in 2002.

**Table 1**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **5/19/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer & Greg Rockrohr, w/ Mary Vincent & Ed Cunningham (ComEd)** |
| **Gen. Notes:** | Tree trimming in the western half of Sterling was generally well done, with several areas of conflicts in the eastern half of the town. | | |
| ***Town*** | ***Item Description*** | ***Photo(s)*** | ***Location*** |
| ***Sterling (5/19/05)*** | | | |
| | Soft maple tree into 1-phase primary | M8 | 19th St. east of 5th Ave. |
| | Primary burning oak tree | M9, M10 | 5th Ave. south of LeFever Rd. |
| | Locust tree very close to primary | | 5th Ave. north of 14th St. |
| | Ash tree very close to primary | | 12th Ave. north of 13th St. |
| | Oak tree limb on primary | M5, M6 | 12th Ave. north of 6th St. |
| | Soft maple tree into primary | M7 | 12th Ave. north of 6th St. |
| | Primary through hard maple tree | M4 | 12th Ave. north of 6th St. |
| | Trees close to primary | | 12th Ave. north of 6th St. |
| | Primary through hard maple tree | M2, M3 | 12th Ave. north of 6th St. |
| | Dead span through tree | M1 | 12th Ave. just north of 5th St. |
| | Tree close to primary | | 15th Ave. south of 5th St. |
| | Hard maple tree very close to primary | | 16th Ave. north of 6th St. |
| | Locust tree into primary | M11, M12 | 16th Ave. north of 17th St. |
| | Hard maple tree into primary | | 17th St. east of 18th Ave. |
| | Soft maple tree into primary | | 17th St. east of 19th Ave. |
| | Trees very close to primary | | 6th St. east of 19th Ave. |
| | Soft maple tree close to primary | | 2nd St. east of 16th Ave. |

Tree trimming in Dixon was well done, with only three close clearance locations noted. My notes of the tree inspection in Dixon are summarized in Table 2.

**Table 2**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **5/19/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer & Greg Rockrohr, w/ Mary Vincent & Ed Cunningham (ComEd)** |
| **Gen. Notes:** | Tree trimming in Dixon was, generally, well done. | | |
| ***Town*** | ***Item Description*** | ***Photo(s)*** | ***Location*** |
| ***Dixon (5/19/05)*** | | | |
| | Soft maple tree growing into 1-phase primary | M13 | 1st St. west of Sherman Ave. |
| | Trees very close to primary | | 9th St. east of Sheridan Ave. |
| | Walnut tree close to primary | | Academy St. east of Assembly Place |

Trees were well trimmed in Belvidere, generally, with some significant isolated and scattered tree conflicts noted (all south of the Kishwaukee River). My notes of the tree inspection in Belvidere are summarized in Table 3. ComEd reported that Belvidere was last trimmed in 2002.

## Table 3

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **8/31/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & John Parise (ComEd)** |
| **Gen. Notes:** | Tree trimming in Belvidere was well done, generally, with some isolated & scattered tree conflicts noted. (Trimmed in 2002). | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Belvidere (8/31/05)*** | | | |
| | Mulberry tree growing into 3-phase primary | 605 | Logan St. between Warren & East Sts. |
| | Norway maple tree into primary (with burning) | 606, 607 | 5th St. west of Caswell St. |
| | Single-phase primary through top of ash tree | 609 | 5th Ave. south of 5th St. |
| | 1-phase primary through edge of honey locust tree | 610, 611 | 5th Ave. north of 5th St. (south of Allen St.) |
| | Trees close to primary | | Andrews Dr. north of Logan Ave. |

Trimming was very well done in Woodstock, with only a few close clearance locations. ComEd reported that trimming was completed there in 2004. See Table 4 for a summary of my field notes in Woodstock.

## Table 4

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **8/31/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & John Parise (ComEd)** |
| **Gen. Notes:** | Tree trimming in Woodstock was very well done, with only a few close clearances (one noted below). (Trimmed in early 2004). | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Woodstock (8/31/05)*** | | | |
| | Soft maple tree close to primary | | Seminary St (Rt. 47) north of North St. |

Tree trimming in Algonquin was a mixed bag of good and bad, with several close clearance locations and some scattered tree contacts noted (see Table 5). Figure 4 in Attachment "A" shows one of the tree conflicts noted in Algonquin. ComEd reported that trimming was completed in August 2002.

## Table 5

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **8/31/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & John Parise (ComEd)** |
| **Gen. Notes:** | Overall, tree trimming in Algonquin was not too bad. There were several close clearance locations, however, and some scattered tree contacts. (Trimmed in 2002). | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Algonquin (8/31/05)*** | | | |
| | Willow trees very close to primary | | Andrews Rd. west of Hanson Ln. |
| | Pine tree burned by 3-phase primary | 621, 622, 623 | Hanson Ln. north of Edgewood Rd. |
| | Locust trees close to primary | | Along Hanson Ln. near Westbury Dr. |
| | Elm trees growing into 3-phase primary | | Edgewood Rd. between Devonshire Rd. & Cardinal Dr. |
| | Silver maple tree into 3-phase primary (w/ burning) | 618 | Harrison St. south of Edward St. |
| | Black locust trees close to primary (trapped) | | Jackson St. at Highland Ave. |
| | Mulberry tree close to primary | | River Dr. between E. Algonquin Rd. & Wood Dr. |
| | Tree of heaven into 3-phase primary | 619 | Getzelman Terrace north of Harrison St. |
| | Box elder tree into 3-phase primary | 620 | Getzelman Terrace north of Harrison St. |
| | Trees close to primary | | Sandbloom Rd. between Hickory & Washtenaw Lns. |
| | 3-phase primary through silver maple trees | 615, 616, 617 | Sandbloom Rd. south of Washtenaw Ln. |

There were many tree trimming problems in Aurora, scattered throughout the city. Several of the tree conflicts with ComEd's primary were severe. There were so many close clearance situations that I stopped noting them all, but many are included in my field notes, summarized in Table 6. Photographs showing some of the problems I noted in Aurora are provided in Attachment "A" (Figures 5 through 10).

**Table 6**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/1/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | There were many tree conflicts in Aurora, and several of the conflicts were severe. Due to the high number of repetitive tree clearance problems observed throughout Aurora, many were not recorded during the inspection. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Aurora (9/1/05)*** | | | |
| | Ash trees very close to primary | | Edgelawn Dr. south of Galena Blvd. |
| | Trees close to primary | | Galena Blvd. just west of Buell Ave. |
| | Elm tree growing into primary | 653 | Galena Blvd. west of Westgate Dr. |
| | Ash tree into 3-phase primary | 652 | Harrison Ave. south of Galena Blvd. |
| | 2-phase 4 kV primary through silver maple tree | 650, 651 | Russell Ave. north of galena Blvd. |
| | Honey locust tree grown into (over & under) 3-phase primary | 654, 655, 656 | Prairie St. west of Elmwood Ave. |
| | 3-phase primary through edge of honey locust tree | 624, 625, 626 | Illinois Ave. east of Highland Ave. |
| | Box elder tree very close to & overhanging primary | 627, 628 | Illinois Ave. west of View St. |
| | Trees close to primary | | View St. south of Illinois Ave. |
| | 3-phase primary through black locust tree | 629, 630 | Illinois Ave. just west of Iowa St. |
| | Ash tree into 3-phase primary | | Illinois Ave. just east of Iowa St. |
| | Linden tree into primary (with burning) | 632 | Illinois Ave. east of Grand Ave. |
| | Ash tree into 3-phase primary | 633 | Illinois Ave. east of Grand Ave. |
| | Trees very close to primary | | Mitchell Rd. east of Aurora Ave. (Rt. 25) |
| | Catalpa tree close to primary | | Aurora Ave. north of Illinois Ave. |
| | 3-phase primary through silver maple tree | 649 | Union St. north of Columbia St. |
| | 3-phase primary through Siberian elm tree | 647, 648 | Union St. south of Columbia St. |
| | Trees into primary | | Coolidge Ave. at Hampshire Ave. |
| | Tree very close to primary | | Center Ave. east of Fourth St. |
| | Ash tree growing into 3-phase primary | 646 | Ashland Ave. east of Lafayette St. |
| | Walnut tree growing into 3-phase primary | 645 | Ashland Ave. west of Pearl St. |
| | Silver maple tree into 3-phase primary | | Talma St. north of Ashland Ave. |
| | Trees into primary | | Jackson St. north of Binder St. |
| | Silver maple trees growing into primary | 642, 643, 644 | Jackson St. south of 7th Ave. |
| | Silver maple tree growing through primary | 640, 641 | Jackson St. south of 5th Ave. |
| | Silver maple tree growing into primary | 639 | Union St. south of 5th Ave. |
| | Cottonwood tree growing between primary phases | 637, 638 | 5th Ave. east of Loucks St. |
| | Tree of heaven growing through single-phase primary | 634 | North Ave. east of Kendall St. |
| | Primary through edge of bitternut hickory tree | 636 | Farnsworth Ave. south of Summit Ave. |
| | Box elder growing into 3-phase primary | 635 | West side of Farnsworth Ave. in easement south of Summit Ave. |
| | ***Many unmarked tree clearance problems*** | | ***Throughout Aurora*** |

Most of ComEd's distribution system in Darien is underground, with overhead feeders around the perimeter of the subdivisions. Tree trimming along the overhead feeders was very well done except for a few locations, mostly in the northeast part of town along 67th Street and Clarendon Hills Road. See Table 7 for a summary of my field notes. Figure 11 in Attachment "A" is a photograph of one of the tree conflicts I noted in Darien.

## Table 7

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/1/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | A high percentage of ComEd's distribution system in Darien is underground. Tree trimming along the overhead feeders was very well done, generally, with some exceptions noted, mostly in the northeast corner of town. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Darien (9/1/05)*** | | | |
| | Honey locust tree into 3-phase primary | 660, 661 | 67th St. at Trenton Ln. |
| | Trees very close to primary | | 67th St. west of Richmond Ave. |
| | Trees very close to primary | | 67th St. between Western & Bentley Aves. |
| | Pine trees very close to primary | | 67th St. at Tennessee Ave. |
| | Spruce trees growing into 3-phase primary (with burning) | 657, 658, 659 | Clarendon Hills Rd. south of 68th St. |
| | Trees close to primary | | 75th St. between Cass Ave. & Plainfield Rd. |
| | Trees into primary | | Clarendon Hills Rd. north of 79th St. |

I performed a more abbreviated than normal tree inspection in Downers Grove, finding good tree trimming along most of the route inspected, but with some tree conflicts with ComEd's primary mostly along and adjacent to 55$^{th}$Street. See Table 8 for a summary of my field notes. There were several scattered close-clearance locations which I did not note.

## Table 8

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/1/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | Tree trimming looked good in Downers Grove, generally, with several scattered close spots in addition to the few conflicts noted below. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Downers Grove (9/1/05)*** | | | |
| | Locust tree into primary | | Belmont Rd. north of Curtiss St. |
| | Trees into primary | | 55th St. just west of Brookbank Rd. |
| | Pine trees into primary | | Brookbank Rd. south of 55th St. |
| | Trees into primary | | 55th St. west of Fairview Ave. |

Trimming in most of Berwyn was well done, but I did note a few scattered tree conflicts, as shown in Table 9.

## Table 9

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/12/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | Tree trimming in most of Berwyn was well done. A few scattered tree conflicts were noted and photographed. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Berwyn (9/12/05)*** | | | |
| | Siberian elm tree growing into 3-phase primary | 668 | North of 13th St. in alley east of Wesley Ave. |
| | Maple tree close to primary | | North of 18th St. in alley east of Elmwood Ave. |
| | Cottonwood tree into 3-phase primary | 669, 670 | South of 18th St. in alley east of Oak Park Ave. |
| | Soft maple trees into 3-phase primary (with burning) | 671, 672, 673, 674 | 23rd St. (Park St.) between Wesley & Clarence Aves. |
| | Soft maple trees into 3-phase primary (with burning) | 675, 676 | 31st St. east of Grove Ave. |

I did not find any tree trimming problems in the western half of Oak Lawn, but did note some scattered conflicts in the eastern half of town (see Table 10). With only the few exceptions noted, I found tree trimming in Oak Lawn to be well done.

**Table 10**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/12/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | Tree trimming in Oak Lawn was well done, generally, with relatively few scattered conflicts (all on the east half of town) noted. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Oak Lawn (9/12/05)*** | | | |
| | Silver maple trees very close to primary | 679 | 99th St. east of 54th Ave. |
| | Trees close to primary | | North of 99th St. in alley east of Cook Ave. |
| | Trees close to primary | | 103rd St. between Minnick & 52nd Aves. |
| | Crimson King maple tree with limb between primary phases | 681 | 91st St. west of Cicero Ave. |
| | Trees close to primary | | Kostner Ave. north of 99th Place |
| | Trees close to primary | | Kilbourn Ave. south of 103rd St. |
| | Soft maple trees growing into 3-phase primary | 682 | 105th St. west of Kenton Ave. |

A significant portion of ComEd's distribution system in Tinley Park is underground, and the overhead lines in some areas are in rear easements (which are difficult to inspect). I noted several tree conflicts with ComEd's primary in the remaining portions of town, some of which were severe. Overall, I felt there were too many significant tree trimming problems in the portions of town that were readily accessible for inspection. See Table 11 for a summary of my field notes. Photographs of two of the tree conflicts I observed in Tinley Park are included in Attachment "A" (Figures 12 & 13).

**Table 11**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/12/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Merle Turner & Mary Vincent (ComEd)** |
| **Gen. Notes:** | A significant portion of Tinley Park is fed underground, and some areas have overhead lines in rear easements where the condition of tree trimming was difficult to see. Several tree conflicts were noted, some of which were severe. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Tinley Park (9/12/05)*** | | | |
| | Primary burning top of ash tree | 689, 690 | 84th Ave. north of Tanbark |
| | Pin oak trees into 3-phase primary (with burning) | 686, 687 | 84th Ave. south of 163rd St. |
| | Ash tree into 3-phase primary | 688 | 84th Ave. south of 163rd St. |
| | Cottonwood trees into 3-phase primary | 684, 685 | 80th Ave. south of 163rd St. |
| | Box elder tree growing into 3-phase primary | 683 | Ridgeland Ave. just north of Arcadia Dr. |
| | Ash tree close to primary | | Oak Park Ave. at Woodstock Dr. |
| | Lombardy poplar trees through 3-phase primary | 691, 692, 693, 694 | 175th St. west of Sandalwood Dr. |
| | Ash trees very close to primary | | 179th St. between Cottonwood Dr. & 92nd Ave. |
| | Poplar trees very close to primary | | 179th St. between Elmwood Dr. & Flannagan |
| | Elm & ash trees close to primary | | 179th St. just west of Durkin Rd. |

Most, perhaps 75%, of Joliet was well trimmed. I noted several isolated pockets of tree conflicts with ComEd's lines, however, mostly in the southern half of the city. Some of those conflicts were severe. See Table 12 for a summary of my field notes. Figure 14 in Attachment "A" is a photograph of one of the tree conflicts I noted in Joliet.

## Table 12

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/13/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Ed Cunningham & Mary Vincent (ComEd)** |
| **Gen. Notes:** | There were several isolated pockets of tree conflicts in Joliet, mostly on the south side of the city. Most of the city (probably 75% or more) was well trimmed, however. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Joliet (9/13/05)*** | | | |
| | Catalpa tree very close to primary | | Corner of Lakeview Ave. & Betula St. |
| | Primary through locust tree | 696 | Lakeview Ave. east of Betula St. |
| | Primary through ash tree (with burning) | 697 | Lakeview Ave. east of Betula St. |
| | Primary through silver maple tree | | Lakeview Ave. east of Betula St. |
| | Primary through oak, ash, & silver maple trees (with burning) | 698 | Oakley north of Lakeview Ave. |
| | Maple trees very close to primary | | Des Plaines St. north of McDonough St. |
| | Elm tree into 3-phase primary | 707, 708 | Richards St. between 2nd & 3rd Aves. |
| | Soft maple tree into primary | | Union St. north of 2nd Ave. |
| | Single-phase primary through top of silver maple tree | 699, 700 | Clay St. east of Collins St. |
| | Single-phase primary through elm & hard maple trees | 701 | Maple Rd. west of Farrell Rd. |
| | Grapevines up pole & on transformer | 702 | Court St. south of Washington St. |
| | 2-phase primary in tops of trees of heaven & soft maple tree (with some burning) | 703, 704, 705 | Court St. south of Washington St. |
| | Elm tree into 3-phase primary | 706 | In tap going south from Mills Rd. west of Pequot St. |

Tree trimming in Streator was a mixed bag, with much of the town looking okay, but with several significant problems scattered in. Overall, I felt there were too many severe conflicts considering the size of the town. See a summary of my field notes in Table 13.

## Table 13

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/13/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Ed Cunningham & Mary Vincent (ComEd)** |
| **Gen. Notes:** | While much of Streator was well trimmed, several scattered tree conflicts were noted, some of which were severe. Overall, tree trimming in Streator was a "mixed bag" of good and bad. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Streator (9/13/05)*** | | | |
| | Elm tree into primary | 715 | Bazore St. east of Shabbona St. |
| | Elm tree into primary | 716 | Corner of Wasson & Morrell Sts. |
| | Catalpa & silver maple trees into primary | 717 | Along Morrell St. east of Wasson St. |
| | Silver maple trees into single-phase primary | 709, 710 | Water St. west of Sherman |
| | Tulip tree growing into primary | | Otter Creek Rd. south of Broadway St. |
| | Elm trees into 3-phase primary (with burning, "electrotrimming") | 713, 714 | Otter Creek Rd. north of Main St. |
| | Maple trees close to primary | | Illinois St. south of Bridge St. |
| | Oak tree growing into 3-phase primary | 719 | Spring St. at Vermilion St. |
| | Elm trees into primary | 718 | Illinois St. north of Charles St. |
| | Elm tree into primary | | Illinois St. north of Hall St. |
| | Primary phase through edge of cottonwood tree (with burning) | 711 | Coalville Rd. south of 12th St. |

Like in Streator, I felt that there were too many significant tree conflicts in Pontiac relative to the size of the town. The problems noted were scattered throughout all parts of the community, and some cases were severe. A summary of my field notes for Pontiac is provided in Table 14, and photos of some of the tree conflicts I noted there are included as Figures 15 through 17 in Attachment "A".

**Table 14**

| Summary of Tree Conditions Field Inspections by ICC Staff | | | |
|---|---|---|---|
| **Utility:** | **ComEd** | **Date:** | **9/13/05** |
| **Circuits:** | **Random** | **Inspector:** | **J. D. Spencer, w/ Ed Cunningham & Mary Vincent (ComEd)** |
| **Gen. Notes:** | Many tree conflicts, relative to the size of the town, were observed in Pontiac. The conflicts noted were scattered throughout the town, and some of them were severe. | | |

| *Town* | *Item Description* | *Photo(s)* | *Location* |
|---|---|---|---|
| ***Pontiac (9/13/05)*** | | | |
| | Single-phase primary through silver maple tree | 726 | N. Mill St. at Jefferson St. |
| | White pine tree very close to primary | | Elmwood Ave. east of Mill St. |
| | Primary through elm trees | 728, 729 | Plum St. between Prairie & North Sts. |
| | Hard maple tree very close to primary | | Plum St. between Prairie & Livingston Sts. |
| | Trees very close to primary | | Livingston St. at Plum St. |
| | 3-phase primary through silver maple tree | 727 | Mill St. south of North St. |
| | Trees close to primary | | North St. between Walnut & Hazel Sts. |
| | Cherry tree into primary | | South of Water St. in alley east of Maple St. |
| | Primary through poplar trees | 724, 725 | East of Bradford St. in alley north of Timber St. |
| | Several trees very close to primary | | In alley north of Timber St. on both sides of Lyon St. |
| | Serviceberry tree into 2-phase primary | 723 | Grove St. just east of S. Vermillion St. |
| | Silver maple tree into primary | | Grove St. between Plum & Mill Sts. |
| | Silver maple tree into primary | 721, 722 | Locust St. south of Grove St. |
| | Ash tree growing into 3-phase primary | 720 | Oak St. south of Humiston St. |
| | Trees close to primary | | Torrance Ave. east of Locust St. |
| | Norway maple tree very close to primary | | Mill St. south of Diller St. |

In summary, my inspections of tree conditions near ComEd's overhead electric lines in the fourteen cities described above revealed inconsistency in the quality of ComEd's tree trimming program. The good news is that I believe ComEd's tree trimming program has significantly improved, overall, from what it was a few years ago. Were that not so, I would not have been able to describe tree trimming in parts of this fourteen city sample of ComEd's service territory as being "well done" as often as I have in this report. The bad news is that enough significant and severe problems remain, however, to cause continuing concern with ComEd's trimming program. Some of the tree conflicts noted were in small isolated areas and could have just been missed by the trimming crews. In some other cases, the tree conflicts were more widespread throughout the town. Perhaps better follow-up inspections by ComEd would improve both of those situations. In many cases, the conflicts involved fast growing tree species. Perhaps more clearance needs to be provided when trimming or more frequent trimming is needed in those areas. There were also several conflicts involving slower growing hardwood trees, however.

NESC Rule 218(A)(1) and its associated note state the following:

> "Trees that may interfere with ungrounded supply conductors should be trimmed or removed.
>
> *NOTE:* Normal tree growth, the combined movement of trees and conductors under adverse weather conditions, voltage, and sagging of

conductors at elevated temperatures are among the factors to be considered in determining the extent of trimming required."

Even though I have noted the significant improvement in ComEd's tree trimming program in recent years from what it once was, ComEd is still not in compliance, generally, with the requirements of NESC Rule 218. It is apparent that ComEd is not making sufficient effort to assure adequate tree trimming is being done throughout its service territory.

The problem areas discussed in this memo and the photos shown in Attachment "A" are meant to demonstrate that ComEd still has a significant amount of work to do to achieve *and maintain* a four-year (minimum) tree trimming cycle that is in compliance with NESC Rule 218 throughout its service territory. ComEd should investigate the problem areas mentioned and determine the cause(s) for the apparent inconsistency of tree trimming in these areas with its otherwise good tree trimming program in the remaining portions of the communities inspected. It should also take steps to correct these problem areas and to prevent recurrence of the problem.

## 3. Recommendations

- ComEd should investigate the problem areas discussed in this memorandum to determine why those areas are not in compliance with NESC Rule 218 and to determine the cause(s) of inconsistency of tree trimming in these areas with the remaining portions of the communities inspected.

- ComEd should resolve the tree clearance problems identified in this report as soon as possible.

- ComEd should assure that it meets and continues to meet the requirements of NESC Rule 218 throughout its service territory by assuring that all trees near its overhead electric lines are trimmed such that there are no tree contacts with its energized primary conductors before it returns to trim them again.

- Staff should perform additional random tree condition inspections in ComEd's service territory in 2006.

**Figure 1 (Photo 05M2)**
**Primary through a hard maple tree,**
**12th Avenue just north of 6th Street, Sterling**

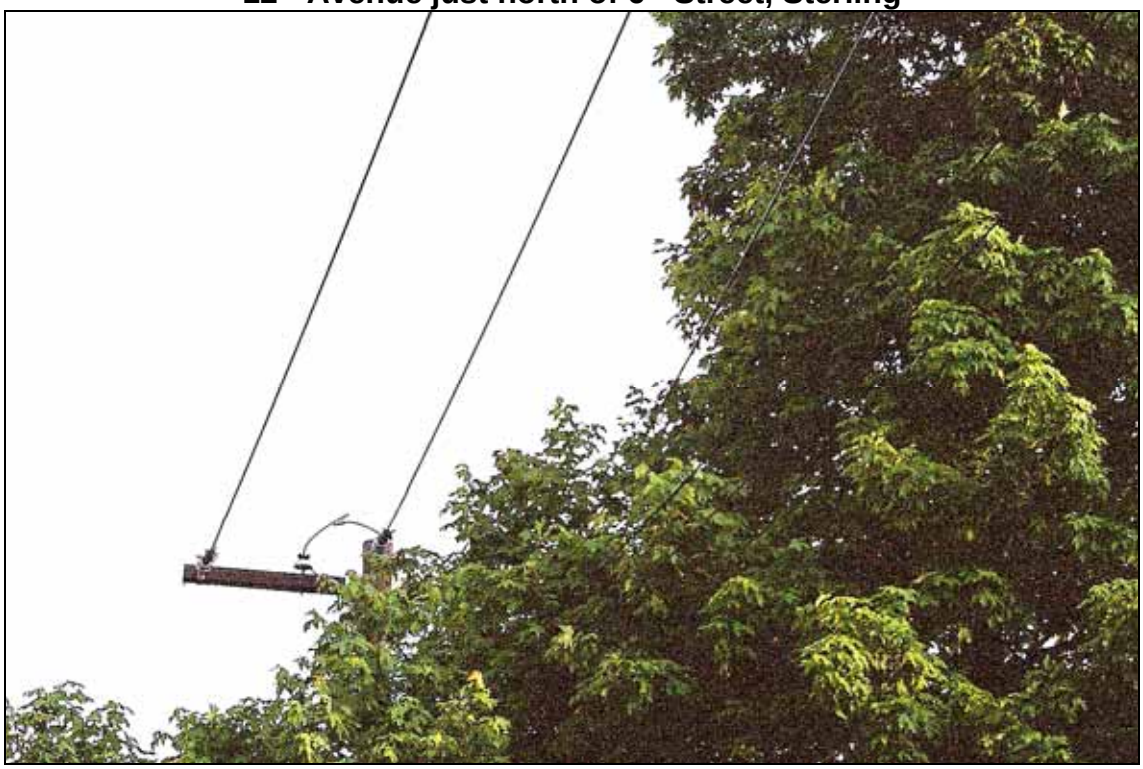


**Figure 2 (Photo 05M6)**
**Oak tree limb on primary conductor,**
**12th Avenue just north of 6th Street, Sterling**

**Figure 3 (Photo 05M10)**
**Primary burning an oak tree, 5th Ave. south of LeFever Rd., Sterling**

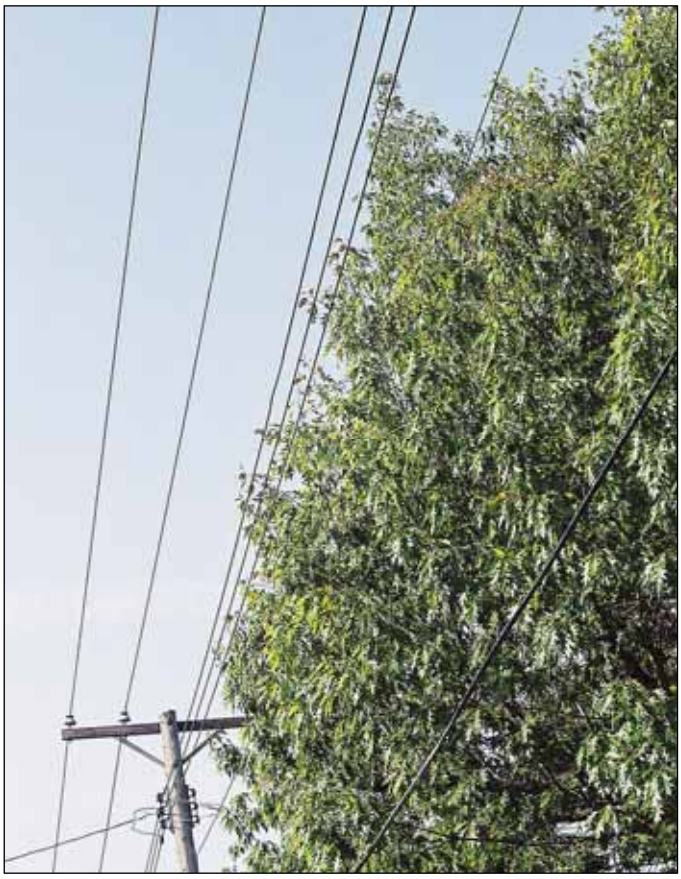


**Figure 4 (Photo 05-CE623a)**
**Pine tree burned by 3-phase primary, Hanson Lane north of Edgewood Road, Algonquin**

**Figure 5 (Photo 05-CE630a)**
**3-phase primary through a black locust tree,**
**Illinois Avenue just west of Iowa Street, Aurora**

**Figure 6 (Photo 05-CE634a)**
**Tree of Heaven growing through single-phase primary,**
**North Ave. east of Kendall St., Aurora**

**Figure 7 (Photo 05-CE636a)**
**Primary through a bitternut hickory tree, Farnsworth Avenue south of Summit Avenue, Aurora**

**Figure 8 (Photo 05-CE641a)**
**Silver maple tree growing through primary, Jackson Street south of 5th Avenue, Aurora**

**Figure 9 (Photo 05-CE648a)**
**3-phase primary through a Siberian elm tree,**
**Union Street south of Columbia Street, Aurora**

**Figure 10 (Photo 05-CE656a)**
**Honey locust tree grown into (over & under) 3-phase primary,**
**Prairie Street west of Elmwood Avenue, Aurora**

**Figure 11 (Photo 05-CE658a)**
**Spruce trees growing into 3-phase primary (with burning), Clarendon Hills Road south of 68th Street, Darien**

**Figure 12 (Photo 05-CE686a)**
**Pin oak trees into 3-phase primary (with burning), 84th Avenue south of 163rd Street, Tinley Park**

**Figure 13 (Photo 05-CE692a)**
**Lombardy poplar trees through and engulfing 3-phase primary, 175th St. west of Sandalwood Dr., Tinley Park**

**Figure 14 (Photo 05-CE698a)**
**Primary through oak tree (with burning), Oakley N. of Lakeview Ave., Joliet**

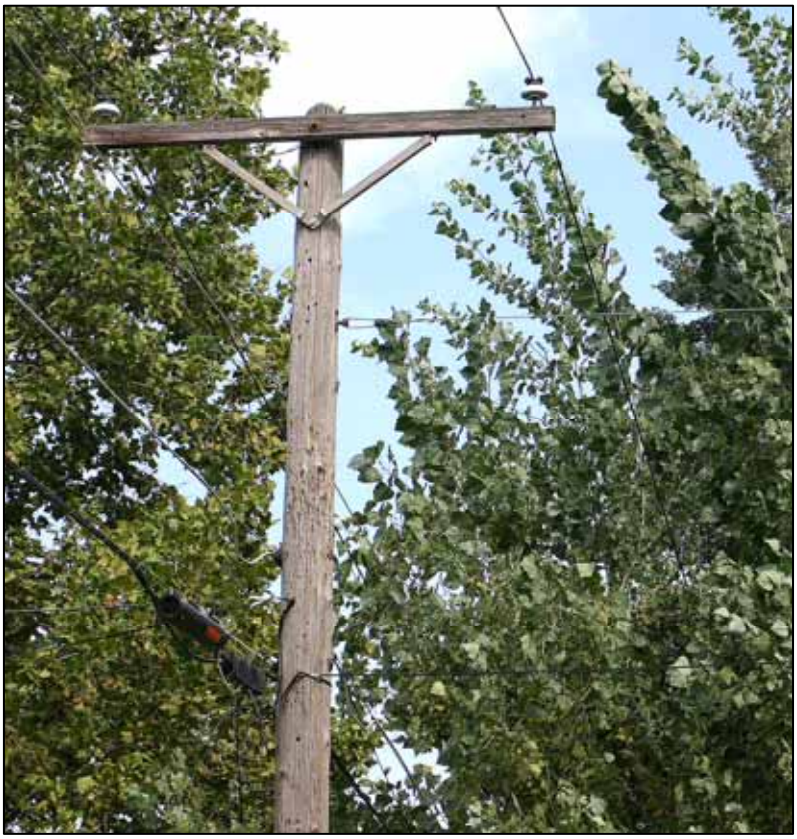


**Figure 15 (Photo 05-CE724)**
**Primary through poplar trees, East of Bradford St. in the alley north of Timber St., Pontiac**

**Figure 16 (Photo 05-CE727a)**
**3-phase primary through a silver maple tree,**
**Mill St. south of North St., Pontiac**

**Figure 17 (Photo 05-CE729a)**
**Primary through elm trees,**
**Plum Street between Prairie & North Streets, Pontiac**

## Random Circuit Inspections:

Notes: This summary for the circuit(s) inspected represents typical observations noted by Staff engineers during the field inspection and DOES NOT represent all of the problems or potential problems that may exist on the circuit(s). In many cases, there were portions of the circuit(s) that were not inspected at all. No effort was made to perform a thorough, detailed inspection as may need to be done by the utility.

## Staff Observations on 5-19-2005:

ICC Senior Electrical Engineer Jim Spencer noticed these badly deteriorated poles in Dixon in May when he inspected tree trimming there.

Photos 05M14 & 15 are of a ComEd pole on E. Fellows St. just west of Jefferson (in front of 526 E. Fellows). That pole is also missing a guy marker.

Photo 05M16 is of a ComEd pole in front of 923 E. Fellows.

05M14 05M15 05M16

## Staff Observations on Monday 6-13-2005:

Staff: John Stutsman
ComEd: Victor (Vic) Hernandez; Mary Vincent

P6130004 & 5 -- While driving from TSS 150 to inspect worst performing circuit Z15077 Staff noted on an unidentified circuit that the field side phase [along E 100th St between Torrance Ave on the West and Muskegon Ave on the East] was into the trees. Also, near this location a slack down guy was observed.

**Staff Observations on Tuesday 6-21-2005:**

Staff: John Stutsman
ComEd: Butch Burgett; Betty Gallagher

While traveling from Itasca to Long Grove during worst performing circuit inspections Staff observed the following deficiencies on unknown [random] circuits:
Silver maple tree grown into Primary
Missing guy guard

While traveling from Long Grove to Glenview during worst performing circuit inspections Staff observed along McHenry Road trees were into Primary at several locations of unknown circuits.

**Staff Observations on 8-31-2005 and 9-1-2005:**

ICC Senior Electrical Engineer Jim Spencer photographed the following ComEd structural problems during tree trimming inspections. ComEd's John Parise was with him on 8/31. Mary Vincent was with him on 9/1. Merle Turner (ComEd - Forestry) was with him both days.

Photo 106-0612 (8/31/05).....Primary "J" bracket falling off badly shell rotted pole, on Kishwaukee Rd. between Belvidere and Woodstock west of Garden Valley Rd. (4th pole east of transformer 350013A).

Photo 106-0613 (8/31/05)…..Wood braces disconnected from pole (bolt totally out of pole), on Ware St. east of Seminary St., Woodstock. **(ComEd has already fixed this one.)**

Photo 106-0631 (9/1/05)…..Neutral spool out of secondary clevis, on Illinois Ave. just west of Iowa St., Aurora.

Photo 106-0662 (9/1/05)…..Broken wood brace on 34 kV line, on Cass Ave. in front of Darien Office Bldg. (8141-8185 Cass Ave.), Darien.

**Staff Observations on 9-13-2005:**

During ICC Staff tree trimming inspection on 9/13/05 Jim Spencer found a hanging wood brace (shown in the photo below) on a ComEd distribution crossarm on Lakeview Ave. west of Central Ave., Joliet.

Ed Cunningham (ComEd Forestry) and Mary Vincent of ComEd were with Staff.

Grapevines up pole & onto transformers, on Court Street south of Washington Street, Joliet.